

978

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OF THE

American Veterinary Medical Association

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AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n)

EDITED AND PUBLISHED FOR
The American Veterinary Medical Association

BY
PIERRE A. FISH, ITHACA, N. Y.

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PIERRE A. FISH, Editor

ITHACA, N. Y.

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OCTOBER, 1916.

No. 1.

Communications relating to membership and matters pertaining to the American Veterinary Medical Association itself should be addressed to Secretary L. A. Merrillat, 1827 Wabash Ave., Chicago, Ill. Matters pertaining to the Journal should be sent to Ithaca, N. Y.

EDITOR'S NOTE:—Some indulgence must be asked because of seeming negligence. Shortly after our return from the Detroit meeting, we were placed in quarantine because of Poliomyelitis in our family. We have been beside troubled waters. Although we have much to be thankful for, there have been times when we have been mentally and physically unfit for work. For any delay and errors of omission or commission, of which we may have been guilty, we hope for as much charity as the circumstances deserve.

P. A. F.

SOME RESOLUTIONS RELATING TO THE JOURNAL

We are publishing herewith resolutions relative to the *Journal*, passed by the American Veterinary Medical Association at Detroit, which we believe will be of interest to our readers:

"It is recommended that the association subscribe for the *Journal* at the regular membership rate for the honorary members.

That the business proceedings of the association together with the constitution and list of members be printed in a supplementary number of the *Journal*.

That when an article is accepted for publication in the *Journal*, the author be notified and 50 reprints will be furnished free of

charge, should he express a desire to have them. Additional copies at the regular rate.

That papers presented at the meetings of the American Veterinary Medical Association are the property of the association; provided, however, that the reports by state and federal employees may be accepted with the understanding that when possible arrangements be made with the editor to publish them first.

That the reports of special and standing committees should be reserved for publication in the *Journal*.*

That the Committee on *Journal* should have discretionary power to reject papers or to permit their publication through other channels."

In order to secure second class mail privileges, a publication must have a "legitimate list of subscribers." In the case of our association this means that a portion of the dues of each member must be paid for his subscription. The honorary members pay no dues and the first resolution is a provision for furnishing them with the *Journal* in compliance with the postal regulations.

The plan of publishing the business proceedings of the association in installments, as during the past year, has its inconveniences. Frequently some of the most important business is done at the close of the meeting and, following the proper sequence, its publication naturally comes late. The papers and reports, with their discussions, will appear in the *Journal* as before. It is believed the new plan will facilitate matters and that the advantage of having the purely business proceedings in compact and convenient form at a reasonably early date, is obvious.

In the matter of reprints to those who contribute articles, it is desirable that these be requested when the manuscript is sent in. It should also be stated whether or not more than the fifty, without charge, are desired and whether there shall be covers. Additional numbers and covers will be charged for. The editor simply acts as an agent in the matter. He will transmit requests to the printer, who will send bills for the extras and to him the payments should be made.

P. A. F.

*It was voted that this should not include the committee on resolutions, as it was deemed wise that the resolutions of the association should have early and general publicity.

A POLITICAL ISSUE?

For some time past comments have appeared in the daily papers relative to the appointment of a veterinarian as the head of the U. S. Geodetic Survey. Discussion has centered upon the veterinary end of it. The "horse doctor" has been referred to in terms of ridicule. If a physician or lawyer, otherwise qualified, had been appointed it is quite likely no criticism would have resulted.

The attack has been made quite as much, or more, upon the veterinary profession as upon the appointee. We do not see anything in a veterinary training that would qualify a person for such a position. On the other hand, if a person is qualified, we do not see why the fact that he may have taken a veterinary course as a part of his educational training, should disqualify him.

The veterinary profession deserves more than ridicule. It has, perhaps, been slow of development in this country; but it is progressing. It has to do with more than the sick horse. There are problems associated with sanitation and epizootics, which are concerned not merely with animals, but human health and public welfare. It requires education to meet these problems, and they are being met. Probably nothing would seem so far-fetched as a relationship between the building of the Panama Canal and veterinary science. That such a possible relationship may exist was pointed out by Dr. V. A. Moore in an address delivered at the California exposition last year. He called attention to the fact that Dr. Theobald Smith, working in the interest of veterinary science, discovered that the causative agent of Texas fever in cattle was harbored by the cattle tick. This fundamental discovery, we believe, facilitated the later discoveries that mosquitoes transmit the organisms of malaria and yellow fever. Sanitation was enriched and its application, by this work, much facilitated. The building of the Panama Canal was quite as much a problem of situation as it was of engineering. The canal had been attempted before and failed with the loss of many lives and millions of dollars. One, and perhaps the chief, factor in the failure was the lack of knowledge of sanitary precautions in those earlier years. The enlargement of the boundaries of our knowledge, from Dr. Smith's basic discovery, has brought success, where, years ago, failure was inevitable.

The thoughtful will recognize and appreciate the efforts of the veterinarians to master the problems that confront them; the thoughtless—may ridicule. We hold no brief for the defense of the present head of the Geodetic Survey; but we do hold a brief for the defense of the veterinary profession and we resent unjust slurs cast upon it. There is nothing so difficult to overcome as prejudice and while this may have been justified to some extent in the past, there is less and less reason for it as time goes on. The veterinary profession is making good,—and ridicule does not advance it.

It has been stated that the appointee is a veterinarian by virtue of his having taken a course in a "Veterinary Correspondence School." If this is true the veterinary profession is not eager to claim him. Correspondence Schools are not considered capable of turning out good veterinarians any more than such schools are capable of turning out good physicians, preachers or lawyers. It has, however, been denied that he was ever a veterinarian, but is a gentleman of education and refinement. Perhaps this imputation is the unkindest of all. Why cannot a veterinarian be a gentleman of education and refinement?

P. A. F.

THYMOL FROM HORSEMINT

Investigations by the U. S. Department of Agriculture have shown that the production of thymol from horsemint may be a fairly profitable undertaking in this country. Thymol is extensively used in medicine and forms the basis of a number of important pharmaceutical compounds. Thymol was formerly imported from northern Europe where it was manufactured from Ajowan seed grown in northern India. Because of the war importations have fallen from 18000 pounds in 1914 to a little above 2000 pounds in 1915. This deficit, it is believed, can, to some extent, be supplied at home.

Horsermint is found wild on light sandy soils from Southern New York to Florida and westward to Wisconsin, Kansas and Texas. Experiments in its cultivation indicate that the plants can be improved by selection to a point where their use for the commercial production of thymol seems warranted. Investigations indicate that distillation of the improved plants will average

about 20 pounds of oil per acre from the first year plantings. Subsequent yields should be around 30 pounds per acre. The phenol content of this oil may be assumed at about 70%, almost all of which is thymol. For the first year there should be a yield of a little less than 13 pounds of thymol and in subsequent years a little less than 20 pounds. The average price of thymol for a number of years has been about \$2.00 per pound. The gross returns per acre from a horsemint plantation may be estimated at about \$25.72 for the first year and \$38.58 for subsequent years. Considering the cost of production, the profit does not seem great, but a dearth in this important medicinal agent and the possibilities of its production at home warrants careful consideration and further investigation in this important matter.

P. A. F.

EUROPEAN CHRONICLES

Bois Jerome, August, 1916.

PROFESSOR METCHNIKOFF.—The daily press, medical journals and the veterinary journals are all, in their capacity, paying a due tribute to the memory of this illustrious scientist, who has just died in a modest room at the Pasteur Hospital. Although circumstances and distance force me to announce the death of the sub-director of Pasteur Institute at this late hour, I may be allowed to reproduce from one of the best obituaries I have read, that of Prof. Roger of the *Presse Medicale*.

“A great and learned man has disappeared:—a great mind has passed away. By the importance of his discoveries and the originality of his theories, Metchnikoff occupies a prominent place amongst those who have enlarged the field of our knowledge and opened to our doctrines new perspectives. Some of his theories may be discussed. His work on phagocytosis is a magnificent edifice that nothing will ever destroy. It insures for his name an everlasting glory.

“Born in 1845 near Kharkof in Russia, Metchnikoff received a very complete scientific education and in 1870 was made professor of Zoology at Odessa.

“He then gave all his active attention to works of embryology and zoology and it was while following his researches on inferior animals that he was brought to the discovery that was to have such

a great influence on the progress of biology and medicine. While observing unicellular organisms and studying their means of defense against parasites, he had the impression that he had under his eyes the prototype of a general process. It was then that he undertook his investigations on daphnes, small crustaceans, whose transparency is such that under the microscope, one can follow in them the battle going on with invading microbes. He also worked on mammalia, and then, not by a fortunate turn of destiny, not by one of the hazards of chance which often serve men of science, but by deep and progressive study Metchnikoff starting from the simplest living structures to the most complex, arrived at the conception of phagocytosis.

"To him, this discovery belongs entirely. Before his researches, diapedesis was known. It was known that leucocytes were able to pass out of the blood vessels, travel through tissues and incorporate foreign substances including microbes. No one had understood the protecting function of the migrating cells nor suspected the existence of intra-cellular digestion. Metchnikoff raised the curtain which concealed one of the most important processes of biology, he has described the different stages of the fight between the invading agent and the invaded organism, he has founded the cellular theory of immunity.

"Following his discovery, he found that leucocytes have not the monopoly of phagocytosis. Some fixed cells have the same privilege. This he proved in studying, with Soudakewitsch, the absorption of the spirillae of recurrent fever by the endothelial cells of the spleen. Again he has demonstrated that phagocytes are able to envelop and digest some cells of the organism, and that they intervene constantly in physiological and pathological processes and serve to remove old and diseased elements.

"Such discoveries could not be accepted without protest. It is customary for original ideas to stimulate critics and excite contradictory experiments. The study of immunity was again taken up generally and by experimenting on animals, vaccinated against infection, it was observed that their serum acquired the property of killing or injuring microbes: phagocytes were no longer the fighting defenses of the organism, their duty was merely to pick up the dead.

"Then began a great polemic between the advocates and the adversaries of phagocytosis: the humoral presented itself against the cellular theory of immunity.

"Metchnikoff published then a series of experiments, the purpose of which was to reduce the part played by the fluids. He showed, for instance, that microbes protected against phagocytes, by blotting paper, would develop easily, notwithstanding their imbibition by the fluids of the organism. Aqueous humor, free from leucocytes, allows the growth of bacteria, which proliferate until the migratory cells arrive.

"Metchnikoff's mind was too elevated to suppose that human ideas were definitive. He understood that fluids had a great part to play in the mechanism of immunity and he then undertook new studies. In 1891 he confirmed, with the vibrio, the discovery of agglutination, confirmed two years after. He then studied carefully the alexins, and demonstrated that the protective substance of the serum came from the leucocytes. The humoral theory of immunity was then subordinate to the cellular theory, it was but a consequence of phagocytosis.

"Metchnikoff had demonstrated in phagocytes the presence of trypsin. He designated them under the name of cytases and admitted two varieties; the macro- and the microcytases. The first is in the lymphoid organs, they easily digest red cells but with difficulty the microbes. The second is in the polynuclear leucocytes and the cells of the bone marrow. They easily digest microbes but red cells with difficulty. They are little diffusible, they pass in the blood only after destruction of the phagocytic elements. They then constitute the cytolytic substance, alexin or complement. For the specific substances which are found in the serum of immunized animals, they come from the macrophages and contrary to the cytases are easily excreted by the cells. It is also to the leucocytes that Metchnikoff attributed the production of anti-toxins, and opsonins, which he attributed to substances and stimuli which develop in the presence of infecting microbes.

"We have dwelt on this part of the work of Metchinkoff to show that he not only had the merit of realizing a great discovery, but has succeeded in erecting a solid monument, which may be improved in its details, but will, however, remain permanent and cannot be destroyed.

"The importance of phagocytosis must not make one forget the other works of Metchnikoff, which would be sufficient to illuminate the name of any learned man. Unable to mention them all, we will mention only a few at random: his observations on the rami-

fication and development of the avian tuberculous bacillus, interesting observations which have contributed to the consideration of this parasite as a fungus. With Roux and Salimpeni, he published an interesting paper on anticholera serum. With Roux he has kept up researches on the inoculability of syphilis in monkeys and on the prophylaxis of that disease. Recently he has published with Besredka papers on experimental typhoid fever and vaccination with sensitized viruses. We have also his works on cytotoxins, on antibodies and the numerous publications on the intestinal flora. During the last epidemic of cholera, he demonstrated that the saprophyte bacteria of the intestines play an important part in resistance to the disease and that the intestinal flora can explain the immunity of the inhabitants of some regions.

"It is principally to the study of the putrid poisons of the large intestine that Metchnikoff gave his attention during late years. He has demonstrated the detrimental influence of the various cells of the organism and has endeavored to connect them with the development of arterio-sclerosis. He was persuaded that the poisons of the large intestine had much to do in the genesis of the alterations attributed to old age. He imagined that one could prolong his life beyond the usual limit in preventing intestinal putrefaction. Those ideas caused him to publish two works on philosophy of great interest. By the study of biologic problems, Metchnikoff developed peculiar views. One of his fancies was that by proper diet one could control and arrest the progress of old age by fighting the intestinal microbes by the ingestion of specific ferments. By the use of fermented milk, which formed the principal basis of his diet, he was convinced that the final day of payment could be put off—and yet he died comparatively young."

His death will cause great sorrow to all who are interested in biology. In Russia and in France principally. Yes, all over the world.

Since 1887 he lived in Paris, he worked at the Institut Pasteur of which he was the second director. It was in France that he realized his great work, and the Noebel prize that was given to him in 1908 was an acknowledgement of the appreciation and esteem with which his works were considered by all.

A long series of publications from him can be found in the pages of the *Annales de L'Institut Pasteur* and two attractive and instructive books are also due to him, *Lectures on the Comparative*

Pathology of Inflammation (Lecons sur la Pathologie comparée de l'inflammation) and *Immunity in Infectious Diseases* (L'immunité dans les maladies infectieuses.)

HEMIANOPSIA.—Under this name or again **HEMIANOPIA** or **HEMIOPIA** is designated in ophthalmology the suppression of the lower visual field and the absence of perception of the objects seen, reproduced upon the superior half of the retina. Individuals who suffer from hemianopia see only the objects that are situated above the horizontal plane which would pass through the center of the pupil.

This affection is not very common even in man, but possibly less so in veterinary practice. Major Veterinary P. Vauthrin writes in the *Revue Generale* that, as far as he knows, it has never been recorded in French veterinary literature. He has had the opportunity to observe one case and he gives a very interesting description of the manifestations presented by his patient, an American light draught gelding of six years, which, had been doing service at the front for several months.

He was reported as refusing to eat or drink and walked with difficulty. He moved indeed as a horse threatened with hemoglobinuria, staggering and suddenly dropping now and then on one or the other of his hind legs.

Six quarts of blood were taken from him and a purgative given. The horse was then taken to his stall close by, where a new series of peculiar symptoms could be observed.

The animal carried his head elevated, his features were anxious, the fore legs were raised more than necessary when in motion. He seemed to feel his way. He stumbled at the slightest obstacle and was ready to fall. Walking toward a watering trough, he did not see it, but stopped only when he touched it. Yet he remained there, without drinking, until he was made to dip his lips into the water.

He saw what was at the height of his eyes, he did not stumble against the wall, he lowered his head when passing under a door. A threatening gesture, close to his head did not frighten him as long as it did not go beyond the level of the lower palpebral border, but the approach of the finger in front of the eye made him react to avoid it.

When in the stable, where there was no hay rack, he did not pick up the hay that lay in front of him, but he endeavored to take hold of it when it was brought on a level with his eyes, even when it was kept at some distance from him. The sense of smell was insufficient. There was no psychical blindness, that is to say loss of memory of visual views, as the sight of hay, the door of a stable, a drinking pail. These were sufficient for him to recognize them.

His behavior was the same for oats as for hay. He did not touch what lay in front of him on the ground, but ate them as soon as they were brought to him or when his head was pulled down to the ground where the oats were. In order to eat he assumed a peculiar position. It was characteristic. He twisted and bent his neck so as to give his head a very oblique direction from forward backwards and from above below in such a way that the line of the face was nearly horizontal, the nose resting between the forefeet, behind which he endeavored to seize the food which was spread under his eyes.

The prehension of oats and bran was more difficult. The ration was placed in a moveable manger, a little narrow and quite long so that he could have one extremity under the eye while he ate at the other. He then rested heavily the inferior third of his face in the bottom of the small manger and in that position ate as long as the depth of the grain reached the height of his mouth. When this depth diminished, so that only the face and nostril remained in it, the horse kept moving his lips in the air for a long time before he could understand that by raising his head slightly he could secure that which he could not see.

The examination of the eyes was rather negative. They were clear, well opened and presented nothing abnormal, except a little injection of the conjunctiva and a slight elliptical dilation of the pupils. The pupil elliptical in form, was equally open in both eyes. Direct and consensual reflexes were preserved. The humors were transparent, the papilla healthy and the tapetum without lesion.

All these manifestations lasted for two days. Then they gradually diminished. The peculiar manner of taking the food was the first to disappear. After the 6th day the animal was well and has remained so since.

Major Vauthrin closes his interesting description with a few remarks on the diagnosis.

Without doubt very rare, in our domestic animals, hemianopia will easily pass unnoticed on account of the absence of subjective information and of ophthalmic lesions and one will have to depend much on careful study of the symptoms, the peculiarities of the attitudes assumed by the patient, and upon the exploration of the visual field.

In relation to the pathology of the affection, the supposition of a temporary congestion is indicated by the manifestations of paralysis, and by the relief that followed the removal of blood in this present case it is possible and proper for this congestion to be taken into consideration, as a cause.

A. LIAUTARD.

Dr. Harry W. Graybill, George Washington Veterinary College, 1911, formerly of the Zoological Division, Bureau of Animal Industry, has recently received temporary appointment as research parasitologist and will be employed under the direction of Dr. Marion Imes in connection with the federal investigations being conducted by the Bureau relative to the treatment of live stock for external parasites. His previous experience in this class of work will especially fit him for such investigations. He resigned from the Bureau about two years ago to engage in research work for the American Smelting and Refining Company upon the question of the effects of smelter waste on the health of live stock. He recently severed his connection with that company and his services are temporarily available for the investigation mentioned.

Dr. Harry F. Kern, Colorado Agricultural College Veterinary Department, 1911, has recently received an appointment on the tick eradication force of the Bureau in the State of Georgia by transfer from the Philippine Islands. This transfer was arranged in the early part of the year, but, owing to the character of the work upon which he was engaged in the Islands, the Bureau of Agriculture requested that his transfer be held up for a few months until that work could be completed.

CONTAGIOUS ABORTION FROM A PRACTITIONER'S STANDPOINT*

CHAS. E. COTTON, V.M.D., Minneapolis, Minn.

It seems presumptuous in me, and I shall not undertake to enlighten the members of this association with any new theories on contagious abortion, as we have papers today by men and scientists who are recognized throughout the world as authorities on this subject.

I shall attempt to give only a brief review of the subject from a practical standpoint.

The practitioner's position, in the past twenty years, with regard to this disease, in the light of the various and numerous recommendations for the methods of diagnosis and the control and cure advanced by our laboratory investigators, scientists, experimenters, and commercial biological houses, has been anything but enviable and we have not succeeded in the past in gaining or enhancing the respect and confidence of the breeders of cattle in our profession. In fact, our knowledge of the disease has been so limited that we could do but little to help the owner in its control.

I have clients in whose herds I have attempted to combat this disease in the past, who have lost all faith in our measures of serological tests for diagnosis or diagnosis by abortin and in our methods of treatment, and when I ask them about the present condition of contagious abortion in their herds, they smile and say: "I would not want to broach the subject if I were in your position", or some such unpleasant or sarcastic remark.

However, I am of the opinion that we are now in a better position to give more intelligent advice and treatment in the control of this disease than we have ever been in the past, and the practicing veterinarian should do more than he is now doing.

The disease is very widespread and has become a serious problem, not only in immense losses to individual owners of breeding and dairy cattle, but is second only to tuberculosis as a national economic question.

The disease has been known to be infectious for a number of years, but the organism which is responsible for this scourge was not discovered until 1896 when Prof. Bang of Denmark succeeded

*Presented at the meeting of the A.V.M.A., Detroit, Mich., Aug. 22, 1916.

in proving that it was a small bacillus which produces a catarrhal inflammation in the pregnant uterus.

Further investigation by M'Fadyean and Stockman, Schroeder and Cotton, Moore and Williams, led to the discovery that infection could and did take place through the alimentary canal by ingestion of milk in young animals and by the ingestion of contaminated foods in older animals.

There is a difference of opinion between investigators as to the source of the bacillus in milk. Schroeder, Cotton and Mohler's work concludes that the bacillus enters the udder from the blood, while Williams claims that it enters through the canal from contamination by discharges from the diseased uterus and genital canal.

Investigators agree that they find the abortion bacillus in milk for years after the abortion.

Investigators agree that the bacillus of abortion is found in the fetus, in the placenta and the uterine discharges of animals after abortion and animals that have aborted once may still carry the bacillus in the placenta at the time of the third successive normal parturition or four years after the last abortion occurred. Thus, although they are not aborters, they are still carriers and disseminators of the infection.

Dr. Boyd, of the University of Minnesota, has a Guernsey cow under observation that aborted twice and since then has given birth to three normal calves. He has succeeded in getting cultures of the *Bacillus abortus* from the placenta after each parturition.

There is a difference of opinion as to the infection being transmitted by copulation. Some believe the bull is only the passive carrier, especially where several breeders use the same animal or he is allowed to serve both healthy and infected animals. Others believe the bull is capable of direct transmission and that the seminal fluid carries the infection, while others believe that the bull does not carry the infection in any manner.

All agree that infected pregnant animals introduced into healthy herds are responsible for the introduction of the disease when they abort. Bacteriological examination of the vaginal scrapings have proven the bacillus is eliminated through this channel for a period of forty-six days after abortion. This is probably the principal source of the disease in a noninfected herd, but it is impossible to determine by any clinical examination whether or not a cow be infected with the germ of abortion.

Dr. Williams believes that calves born in infected herds from diseased mothers become contaminated not only *in utero* but from nursing the diseased mothers.

The disease has been produced artificially by feeding infected material, by injecting pure cultures of the bacillus abortus intravenously, and also by placing pieces of the placenta of aborting animals into the vagina of pregnant cows.

Investigators disagree as to the channels of infection. M'Fadyean and Stockman, and Mohler believe that the infection enters the digestive tract by contaminated food and passes through the blood to the uterus and there produces pathologic lesions which cause the abortion. Drs. Bang and Williams believe that the organism enters the uterus through the cervical canal not later than the date of conception and after the cervix has been sealed and the infection has not gained entrance the animal will not abort. Williams believes "most animals become infected at a much earlier date, and the infection is lying in wait in the uterine cavity at the time of first copulation or exists elsewhere in the system in a more or less latent state."

SYMPTOMS:—Williams claims that the act of abortion is only one symptom of this chronic contagious disease of the generative organs of cattle and that the disease is improperly named. He states that the disease manifests itself by the four leading symptoms: viz., abortion, premature birth, retained afterbirth, and sterility. He also states that "granular venereal disease is universally distributed and it has, by clinical observation, a vital relation to contagious abortion." In herds in which contagious abortion exists, white scours and pneumonia in the newborn calves are very common. Both of these infections have a close association with contagious abortion. The investigations of Schroeder and Cotton, and others show that the calves are exposed to the bacillus of abortion through the ingestion of raw milk. In the fetus from cows which have aborted pure cultures of the *Bacillus abortus* are found. Williams believes that calves born from diseased mothers have the infection in their alimentary tract from having swallowed the amniotic fluid while in utero. He states "granular venereal disease appears in the genital sheaths of calves at 30 to 50 days of age, when fed upon raw milk," and the "preputial hairs concurrently become stained brown or black and matted together with muco-pus. The blood of these calves

largely reacts to the serologic tests from the 20th to the 60th day, receding for a time when the calf is placed largely upon herbageous food, but will react again about the time of the first estrum". He says, "calves grown exclusively upon boiled milk generally retain clean sexual or preputial hairs, do not develop granular venereal disease markedly, and their blood fails to respond to the serologic tests for contagious abortion."

The premonitory symptoms of abortion are swelling of the udder and vulva, a muco-purulent, odorless discharge from the vagina, which may be streaked with blood.

Animals may abort, however, without any premonitory symptoms. If animals abort in the early stages of pregnancy the fetal envelopes will be expelled with the fetus, but when abortion comes at a later stage the membranes are invariably retained for some time.

Following the abortion there is a typical vaginal discharge continuing for several weeks; this discharge is of a dirty brown or reddish brown color, sticky in character and adheres to the tail and other parts of the body with which it comes in contact. Gradually the discharge becomes lessened and may finally cease.

There is always a pyometra or endo-metritis present, which is primarily due to the abortion bacillus followed by a mixed infection.

Sven Wall claims that the endo-metritis caused by the abortion bacillus "seems not to occur or is rare." He states that the secondary infections are of a more serious nature than the abortion infection, and "they sometimes end fatally by septic and putrid intoxication or by bacteremia; sometimes they lead to a chronic metritis or pyometra, which heals more or less slowly and often leaves an atrophy and sclerosis of the mucous membrane of uterus, and the wall of the uterus may be thickened."

The cervix will contract but the wall of uterus often times loses its tone and may be flaccid.

The pyometra often leads to a cystic degeneration of the ovaries, of the corpus luteum, manifested frequently by nymphomania. It may also lead to a salpingitis or inflammation of the oviducts. The oviducts may become cystic or there may be a pyosalpinx or purulent collection of the oviducts. All of these pathological changes in uterus, ovaries and oviducts produce temporary or permanent sterility, which is a source of greater financial losses to the owner of valuable dairy or breeding animals than is the abortion itself.

The sacro-sciatic ligaments drop lower and lower, giving the spine a humped-up appearance in front of the base of the tail.

DIAGNOSIS:—From the standpoint of the practitioner our means of diagnosis in the past with the idea of protecting the owner in the spread of the infection to healthy pregnant animals has been our greatest problem.

The premonitory symptoms, if there are any, are not noticed and are of very short duration and there are no specific symptoms or lesions until the abortion occurs.

The bacillus cannot be found in uterine or vaginal discharges until just before and following abortion.

M'Fadyean and Stockman first introduced the abortin test. Our experience with it in this country has been anything but satisfactory. Animals reacting to the test would be removed from the herd and after a short period a number of those which had failed to respond to the test would abort, while the ones that had reacted would continue to carry their calves to full time.

We were then recommended to have laboratory men make the precipitation, the complement-fixation and the agglutination tests. The practical results obtained from these tests in our experience were not much better than when we undertook to separate the diseased from the non-infected ones by the abortin test. However, it is the concensus of opinion of investigators that the agglutination and complement-fixation tests are the most reliable and if they are able to make a series or succession of tests on the animals in a herd, they succeed in finding the infected animals.

These blood tests, when successful, are only of use in detecting the infected animals and do not indicate the degree of infection, as a cow which reacts may not abort but may show other symptoms of the disease. Some authorities claim she may react and be an immune animal. They will thus prove of value in the early detection or diagnosis of the infection in a herd where there is a question of diagnosis.

All abortions, premature births, retained afterbirths and sterility in dairy and breeding cattle are and should be treated as symptoms of this contagious disease.

IMMUNIZATION:—Some investigators have concluded that because abortion is more common in heifers and after they have aborted from one to three times and then cease to abort, they have acquired a natural immunity.

Sir Stewart Stockman in 1914, on immunization stated, "immunization appears to promise the best solution of this difficulty. It is admitted that the majority of cows do not abort at two successive pregnancies, and that this is due mainly to a certain degree of resistance having been acquired from the first attack of the disease, as is the case of many other diseases. Unfortunately, a considerable proportion of cows do abort twice in succession, and a smaller proportion may abort three times. It is possible that this is due partly to some of the animals not having had a large enough dose of infective material to render them sufficiently resistant to infection; it may also be that the virus had not acted long enough to produce immunity, or that some animals are not so immunisable as others, and we know that this applies in relation to other diseases".

Dr. Williams states that an animal which has aborted once or twice does not become immune but is more liable to abort again or be sterile, to suffer from premature birth or retained afterbirth than a cow which never has aborted. He says: "Immunity cannot come as a result of disaster. If immunity is to be secured, it must be considered as a consequence of the presence of the infection in the system and not as a result of any disaster which it may have occasioned. There is no more reason to expect immunity from abortion than there is from premature birth or retained afterbirth. Yet we frequently observe that a cow which has retained afterbirth one year is very liable to have it again the succeeding year, and in our clinic we have followed some cows with retained afterbirth through three succeeding years. In these cases we find that if the matter is followed closely and the uterus repeatedly and thoroughly disinfected, the retained afterbirth does not recur, but if the retained afterbirth is removed in the ordinary way and the animal then abandoned, the retained afterbirth or some other disaster quite probably follows if she breeds again. That is, the one defeat by disease has lowered the vitality of the animal and invited succeeding disaster. If the infection which exists in the uterine cavity is not destroyed or washed away by douching, it is retained there ready to produce disease again at the first opportunity. According to our data, a heifer which conceives at the first service, carries her calf for the normal period, calves promptly and expels her afterbirth promptly, is far more likely to repeat the performance during her second breeding year than is the heifer which has con-

ceived with difficulty, requiring several services, or has aborted or given birth prematurely or has suffered from retained afterbirth. This is not in conflict with the generally accepted idea of immunity in infectious diseases. In those infectious diseases where immunity is artificially induced, it is brought about without producing disaster or disease”.

Williams, in an earlier article, states: “heifers in general are not so liable to abort in the second pregnancy as they are in the first, nor are they so liable in second pregnancy to have metritis with retained afterbirth. As the age of the animal advances, until old age with diminished vigor arrives, the constant tendency is to suffer less and less from the infection of contagious abortion. It is then an age immunity and not an immunity founded upon disaster.”

In 1908 M’Fadyean and Stockman started some experiments with the idea of producing immunity. They have had encouraging results and Norris, of Dublin, recently stated: “artificial immunity vaccination has now had a fairly extensive trial. It may be used to strengthen an already existing naturally acquired immunity, or to set up immunity in clean animals which might be exposed to risks of infection.” In the same article he states: “generally speaking it may be said the results so far show a decided but not striking tendency in favor of vaccination. It should, however, be used intelligently, a warning necessary in these days when vaccine therapy appears to be accountable for a good deal of promiscuous quackery of a pedantic type.”

Mohler and Traum, Giltner and Bang have carried out experiments both with living and killed cultures of the *Bacillus abortus*, but the majority of these experiments resulted unsatisfactorily.

We are waiting anxiously the result of the work of Dr. Eichhorn, Chief of Pathological Division of the Bureau of Animal Industry, in the immunization of animals for this disease by vaccination and feel confident that he is sufficiently conservative that we may have no fear he will advance or recommend any vaccine for use in the field, until such time as his experiments have warranted such deduction.

Until we have something more positive in the line of immunization by vaccination, I am of the opinion that we, as practitioners, should not undertake to build up false hopes in the minds of owners

of our herds throughout the country, by the use of the various vaccines that are now on the market.

TREATMENT:—Many medicinal agents, quack mixtures and concoctions have been recommended, bought and used by veterinarians and the owners of cattle, but none have proven to be of any value.

The use of carbolic acid was first recommended by Brauer, who administered it in small doses subcutaneously to the pregnant animal. Later other investigators recommended its use in solution for administration by the mouth. Veterinarians in dairy and breeding districts immediately grasped this treatment in the forlorn hope that they finally had a cure and a solution of the problem of control of this disease. In some sections of the country we have able and conscientious practitioners who are satisfied that they are obtaining good results from its administration and some still regard it as a specific. In the researches of others and in our own experience we have found it to do no good.

Rich, of Vermont, later recommended the use of methylene blue as a remedy. He found that it was a strong germicide for the bacillus of abortion. Other investigators experimented with its use and invariably their results have been unsatisfactory.

Again the veterinarians and breeders grasped this new treatment with enthusiasm. In breeding districts the cattle, their attendants, the floors of dairy barns, the milk secreted and the urine excreted were saturated with methylene blue and still contagious abortion continued in the herds and continued to increase throughout the country.

There is no question but that in individual herds where either the carbolic acid or the methylene blue treatment has been used under the direction of a qualified veterinarian, some good results have been obtained, not from the administration of the drugs, but from the sanitary precautions and measures which have been used in conjunction with the treatment. It is a known fact that we can succeed in getting an owner to practice sanitation in his herd, if he is also given some remedy to administer to the animals. In all instances where practitioners claim to have had good results from the use of these drugs, we will find they have used disinfectants liberally in the barns, have isolated the aborters, removed the afterbirths, flushed the vagina, washed the external genitals and thighs of all pregnant animals, etc. They have thus succeeded to a certain extent in controlling the disease.

This disease, like all other contagious diseases, appears in waves or cycles, in other words it may be severe one, two or three years or mild or entirely disappear the next succeeding years. A herd may have been so generally affected with disease that practically all of the heifers and many of the cows will abort, and those that carry the calves to full time give birth to young which die from white scours, pneumonia or other affections resulting from their weakened condition. Thus the herd is depleted of its young animals, the older animals have acquired a natural or age immunity, or have become sterile, and unless new heifers from outside sources are introduced into the herd the abortion will have subsided. If any treatment is undertaken in these particular herds at this time, the veterinarians and owners could possibly draw the wrong deduction and conclude that the disease had been controlled by the specific treatment or drugs administered.

CONTROL:—I will attempt to give briefly a practical outline of control of this infection in the light of our present knowledge.

(1). Clinical diagnosis, when not positive, should be confirmed by agglutination or complement-fixation tests in order to detect the disease early. We should remember, however, that these tests only detect infection and do not indicate the virulence or severity of it.

(2). Prevent gross infection by the proper disposal of fetus, placental membranes; premature calves, uterine discharges, etc.

(3). Minimize infection in stables by liberal use of disinfectants and whitewash badly infected quarters.

(4). All pregnant animals a few days prior to calving should be thoroughly bathed, removed to a box stall which has been cleaned and disinfected, the vagina should be douched, the tail, thighs and udder should be washed with a mild antiseptic. The new born calves should be allowed to suckle the mother for a period of a few days after birth, but the vagina should be douched, the thighs, tail and udder washed with antiseptic each time before allowing the calf to suck. Some prefer that the calf should be fed, when the cow should be washed and cleaned in the same manner, the milker should disinfect his hands, the first few streams of milk discarded in a separate vessel and not on the floor, and the milk should then be drawn into a sterilized vessel. Feed calves on boiled milk after they are eight to ten days old to prevent infection of *Bacillus abortus* and colon bacillus which often coexists.

(5). If conditions permit and it is practicable, remove aborting animals, those which give birth prematurely, animals with retained placenta and those that show premonitory symptoms of abortion, to a quarantine in separate stables. They should not be allowed to remain in the stable or pasture with the rest of the herd. A close vigilance should be kept for abortions in early pregnancy as they often escape notice. All animals which have aborted and those with retained afterbirth and uterine discharges should be kept in quarantine and not be bred back for a period of two months or until the uterus has regained its normal condition. Treatment of these animals should be carried out faithfully and in a large percentage of cases you will be able to prevent sterility and they will continue to be useful and productive. Fetal membranes should be removed as soon as possible if it can be done without force. The uterus should then be douched with a mild antiseptic and the fluid carefully drawn off. Williams recommends the introduction of one-half ounce of iodoform in a capsule or in suspension in olive oil. This dissolves slowly, does not irritate the uterus and prevents decomposition and the extension of the infecting process. As a douche he recommends a two per cent solution of Lugol's solution, which should be followed by a normal salt solution. The douching should be repeated once a week until the uterus and cervical canal are normal, then the animal should be bred.

Authorities claim that the cystic degeneration of the corpora lutea is always associated with the chronic endometritis and that by dislodging the diseased corpus luteum and disinfecting repeatedly the uterine cavity and cervical canal, you will succeed in getting satisfactory results.

Until within the last year we have been unable to properly disinfect the uterus and succeed in removing all of the fluid. Now the operation is greatly facilitated and if one is careful can be done with practically no danger to the animal by the use of instruments which were originated by Albrechtsen of Copenhagen and later brought to this country and perfected by Williams.

(6). Newly purchased pregnant heifers should be kept in quarantine until after calving before being introduced into herds.

(7). Sheath and penis of bulls should be douched with antiseptic before and after service; the vagina of the heifer should be douched with a mild antiseptic and followed with normal salt solution before breeding.

(8). Advise owner as to danger of abortion from the establishing of breeding blocks where several breeders use the same bull.

(9). Advise clients when purchasing cows to select animals with second or third calf if possible.

(10). Advise against disposal for slaughter of valuable animals in herds where abortion has appeared, with the idea of starting again with all young animals, as the cows that have already aborted are less apt to abort again than the young animals, and unless they have become sterile will continue to be valuable.

(11). The problem of sterility following in the wake of abortion is the cause of such great losses that any outline of control or remedy for their infection which ignores it, cannot be called effectual.

I do not intend to pain you any further nor undertake to advise you on the treatment of sterility, as my knowledge of this subject has been obtained by study of Dr. Williams' writings and a few days personal association with him in the work.

Our profession and the live stock industry of this country owe him a debt we can never pay for the practical results he has succeeded in obtaining by his long and arduous investigations in the field.

I hope that all veterinary institutions will shortly give a course in uterine surgery and the treatment of sterility, and I believe practitioners in dairy and breeding districts will immediately avail themselves of the first opportunity to learn the practical technique as recommended by Williams.

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SOME ADVANTAGES OF SANITARY PRECAUTIONS IN CATTLE PRACTICE*

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We are now at an era when the subject of so-called contagious abortion, sterility and the allied maladies are receiving more attention both by the veterinary profession and stockmen than perhaps any time in the history of the world.

The cause of this unusual interest is probably due in part to the advance in value of the bovine coupled with the increasing interest in purebred cattle by shrewd business men of large affairs; and partly to the advanced methods of studying diseases that are so rapidly being improved and modified both by the veterinary and medical professions. As is true with all maladies, in order to control them with greatest efficiency and least financial loss, their true character and characteristics must be worked out and naturally the burden rests upon our bacteriologists, pathologists and their co-operators.

The conditions mentioned above have in turn apparently prompted all strict scientific workers to direct most of their energies towards bacteriological and biological research with the hope of evolving something that will be useful to the cattle industry through the veterinary practitioner.

A few others, notably Prof. Williams of New York have recently taken up, in reference to sterility, what might better be termed, surgical interference coupled with sanitation requiring highly professional knowledge and technique—but so far as the

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writer is aware very few practitioners in the face of all this extremely scientific atmosphere that prevails at present, have had the temerity to present before veterinary bodies or to contribute to our veterinary journals any of the simpler every day practical methods which have given results, in the way of money saving to our clients and credit to our profession.

I yield to no man in respect for the scientific advancement of our profession, but no one can gainsay that up to the present time our scientific knowledge of sterility, abortion and the allied venereal ailments with the various biological tests and treatments are far from being perfected or reliable agents. I therefore believe it the duty of every practicing veterinarian to apply such harmless sanitation as our present knowledge gives proof to be judicious, so that we may not be looked upon as drones and useless ornaments to the cattle industry until such a time as our scientific workers make it possible for us to make positive statements and give more certain relief. The interest in purebred cattle has made wonderful strides during the past one or two decades and as is true with any other branch of animal industry, maladies and annoyances have kept pace with the increase. This is quite explainable in the case of, for instance, tuberculosis where the traffic in cattle and the feeding of unpasteurized by products has spread this scourge as surely and as widely as if a sower had gone forth with his bag on his shoulder and scattered it to the four winds. With this malady one diseased animal placed in a healthy herd serves as a nucleus to contaminate and infect a large majority of that herd and a member or several members of that herd going into another herd contaminate it and so we have an endless chain. Similarly the cow with a tuberculous udder infects the entire milk supply of one dairyman. This milk was dumped into a vat at the creamery with other batches and the skim milk drawn out and taken home to feed the heifer which in due time developed a tuberculous udder to contaminate more milk to feed more calves.

This serious situation did not receive much attention until some 15 years ago and even then the question of suppression and correction was ridiculed by many and while I am ashamed to admit it, it is nevertheless true that bills seeking to correct these abuses, particularly the one pertaining to the compulsory pasteurization of creamery by products, has for several years been defeated in the legislative halls of our own state and while we hoped it would

surely be placed on the statute books this year it has again been defeated by those who pose as the friend of the farmer.

After giving these matters a little thought we find that the spread of other contagions are quite as simple from animal to animal and through milk and its products as is tuberculosis.

While we who have the interest of animal husbandry at heart have been bending every effort to control and suppress tuberculosis among cattle, infectious swine diseases among hogs, and rabies among all animals, our pure bred cattle men have been knocking at the doors for knowledge and saying to us, "There are scourges among our cattle which unless something is done to prevent their progress, will prove a greater menace to us than tuberculosis has ever been, with all its seriousness.

These scourges referred to are what we term for want of a better name, contagious abortion, sterility, white scours or infectious scours in calves. Prof. Williams has wisely said that in his judgment these diseases have a strong relationship, and I would go one step further and add that a large percentage of all our udder troubles is associated with these infections of the generative organs, whatever they may be.

In order to cope successfully with the phenomenon that brings about diseased ovaries, metritis, infectious mammitis, gangrenous mammitis, etc., we must begin before conception. We must either select our animals from a herd where there is a herd record kept showing that they are free from these scourges as well as tuberculosis, so far as can be determined by the application of our present knowledge for the detection of these diseases or we must if we are to be successful breeders, apply every known sanitary precaution, examination and test to determine that our breeding animals are healthy before we mate them. If the female generative organs are not healthy then they should receive proper attention under veterinary supervision before a valuable sire is allowed to cover such an animal at the risk of either contamination or infection and even in herds where there is no possible evidence for suspicion, it is carelessness and bad management to allow a male animal to do service without flushing the prepuce with a mild antiseptic both before and after service. A simple and very effective and sane precaution in animal breeding even though the danger of contagion may not be so great in the male as in the female and one which the veterinary profession should advocate, is the douching

of the sire of every herd; this also incidentally impresses the owner with the danger of contamination where bulls are allowed to be used miscellaneously on neighbor's cattle.

We believe even with our meagre knowledge of these serious ailments that it is possible for the practicing veterinarian to be of material assistance to stockmen in controlling these scourges and with intelligent co-operation ultimately build up a non-diseased herd. We realize that this subject is to be discussed by men who are giving great energy and thought to its solution and consequently I will summarize my remarks with what might be styled statistics or case reports.

I wish, however, to add here a word relative to infectious scours in calves which we believe to be so closely correlated to our breeding problems; in fact it is our opinion that if rigid sanitation is applied in controlling sterility and contagious abortion, calf troubles need give us little concern.

If you will refer to even the most modern text books you will find that many authors agree that the ways in which white scours may be transmitted to calves are:—first—uterine infection, second—vaginal infection at the time of parturition, third—through the umbilicus coming in contact with an infected stall.

For several years our observations have convinced us and we have so stated before that there is still another important way in which a calf may become infected and that is through the digestive tract; by its mouth coming in contact with the infected coat of the cow shortly after birth, when searching about for the mammae; or taking into its digestive tract milk which has become infected in the udder through the teats as they become congested and filled and the sphincter partly dilated.

The writer has had occasion to give advice in several large herds where contagious abortion in cattle and white scours in calves have appeared with no uncertain violence. In such cases for several years past it has been our custom to carry out sanitary methods such as I will briefly enumerate by citing two particular cases that occurred in our practice within the past year and give our methods of control. The positive abatement of the maladies in both of these and other herds leave no question in my mind as to the merit of this method.

CASE I. A large dairy herd consisting of several hundred milch cows where there had been more or less abortion was stricken

rather suddenly with a violent outbreak of the so-called white scours in calves. They had lost up to the time we were called in consultation, about 30 calves, about 75% of all that had been born within the past two months. We at once established a routine treatment for the animals in advanced pregnancy. Every animal within a month of calving was douched daily with a mild warm solution of permanganate of potash ($\frac{1}{2}$ dram to the gallon.) and all the external genital organs, hindquarters and udder thoroughly scrubbed with soap and water. This was kept up to within about a week of freshening when the animal received an additional scrubbing of the entire body. A maternity stall was then prepared by thoroughly disinfecting and liming the floor where she was housed until she freshened; the douching being continued each day until she had freshened and for a period after freshening, depending upon the character and amount of discharge following birth, with the result that the infectious scours ceased immediately.

The offspring of any cow that had treatment for four days before she calved did not develop white scours and no particular attention was paid to the calf other than to keep it clean and the udder milked out a little (before the calf is allowed to nurse) and scrupulously cleaned so long as there was any vaginal discharge to infect it.

We contend that the discharges from the vaginal tract infect the stalls, slime the tail and get into the udder and infect the calf. We frequently have the same source infecting a cow's udder and giving rise to mammitis.

Another outbreak differing in character which we had occasion to treat recently in northern Orange Co. may also be of interest to some of you owing to the fact that not only the life of the fetus was involved but also the life of the dam. I will recite the history of this outbreak in order to again substantiate my belief in the virtue of sanitation in these conditions.

The owner called our office one morning and said that he had some six or seven cows to freshen recently; that the calves had apparently white scours and that they had lost three of the cows and all the calves and that the udders of two of the cows that had freshened within the past three days were apparently affected the same as those that had died. We went to the farm at once; one of the cows was already dead and the other died during the day. Both of these animals had gangrenous mammitis thus making a total of five cows and their calves within two weeks.

The history was that all the animals that had so far freshened this season had retained the membranes which were of a dark sanguinous appearance, putrefying rapidly, followed by a copious catarrhal vaginal discharge. The dams had in each case gone full term and freshened in apparently splendid physical condition. The calves would develop white scours two, three or four days after birth and either die immediately or develop septic arthritis and terminal pneumonia. The cows that died developed a darkened udder either the second or third day with progressive gangrenous mammitis, general septicemia, death following in three or four days. Those that survived developed the catarrhal vaginitis mentioned above; lost the udder, lost flesh and were practically worthless.

We immediately prepared a section of the barn for the cows due to freshen within the next month. This section was thoroughly scrubbed, disinfected, limed and bedded with new shavings. We scrubbed with warm water and soap every cow that was to be moved in this section. We explained to the owner that it was our judgment that the discharge from the vagina was killing his cattle by infecting the udder and if he wished to save his herd that douching twice a day every animal until the time she freshened was imperative.

One of the cows so treated freshened two days later, the same semi-putrid membrane being in evidence; the calf lived two days and died. The cow was taken from her quarters twice daily, put in the douching stall and douched, with the result that she never missed a feed, dropped the membranes in a few days, and made a record of 31 pounds. Sixteen more freshened within the next two months without a single mishap to the udder, cow or calf, notwithstanding that the membranes according to the herdsman were of the same character of the cows that died. Every animal in this herd has been douched daily for three months after freshening and the owner and herdsman tell me that conception has been more prompt and certain with them this year than ever before.

This in turn encourages our original argument, that by controlling one of the maladies we have saved the cow, stamped out calf scours and surely lessened sterility.

THE DEATH AND EXPULSION OF THE IMMATURE FETUS AS A STANDARD FOR MEASURING THE PREVALENCE OF CATTLE ABORTION*

W. L. WILLIAMS, Ithaca, N. Y.

The death and expulsion of the immature fetus, which two occurrences combined we term "abortion", do not constitute a disease, a lesion, or, except with some important reservations, a symptom. Neither the death of the fetus nor its expulsion from the uterus is basically of great significance.

Death is the universal destiny of all life, and consequently is in no sense unique or striking. The ovaries of cows contain many thousands of ova, but very few of them become fertilized. Thousands die for each one which lives to experience fertilization. Among spermatozoa, death is even more extravagant, and millions die for each one that comes into conjunction with a fertilizable ovum and contributes to the generation of a new animal.

At the moment the fertilized ovum commences its existence, its death begins, and the life of the individual may be terminated at any time. From the beginning of the life of the individual to the maximum duration of life, there is no time at which death may not occur. Death is not an important symptom of any one disease, is peculiar to no one disease, and cannot serve to differentiate one disease from another. In abortion, the death of the fetus occurs beyond our view, within the uterus. We do not observe the process of death, but merely the fact that death has occurred. We have not seen the fetus sicken and die. The expulsion of the fetus from the uterus reveals the fact that it has died.

The expulsion of the fetus from the uterus has nothing very remarkable about it. Most fetuses are expelled from the uterus. When a fetus is not expelled, we regard the failure as abnormal. Writers speak also of symptoms of impending abortion, of abortion in course, and of past abortion. These "symptoms of a symptom" are not of remarkable value. The symptoms of impending abortion are fundamentally identical with those of impending parturition, those of abortion in course have no basic differences from the act of parturition, and the symptoms that abortion has occurred are not fundamentally different from those following parturition.

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It has been the custom, however, for the phenomenon of abortion to be used as an index of the intensity of the contagious disease of cattle misnamed "contagious abortion". Investigators generally assert freely that the death and expulsion of the immature fetus is not the disease, but, having made the admission, they generally ignore it at once and turn to the phenomenon as their index of the severity of the malady. One finds the phenomenon of abortion in general use as an index in research work, in differential diagnosis, and in attempts at eradication, cure or control.

In research work the phenomenon of abortion has been made the alleged basis for establishing the cause and character of the malady. For many years various investigators, because they thought they had experimentally and reliably induced abortion in cattle and other animals, have imagined they have proven thereby that the disease was contagious and that it was due to the activity of a certain organism. Attempts to produce experimental abortion have been recorded in such a manner as to lead to the common belief that the phenomenon of abortion could be readily, regularly, and reliably induced in cattle and other pregnant animals at will and that the induction of this phenomenon proved its contagiousness and its other basic characters. Few of the failures to induce experimentally the death and expulsion of the fetus have been recorded, and even when recorded the facts have been largely ignored and the apparently successful experiments magnified. Readers lost sight of the evident failures, were blind to them, and saw only the imaginary successes. Perhaps the most extensive and valuable researches in this field yet recorded, and which are perfectly typical, were those of M'Fadyean and Stockman of England. Most readers, after studying their very valuable report, came to believe that they had shown beyond question that they had at will caused pregnant heifers to abort by inoculating them in one way or another with the abortion bacillus of Bang. A critical review of their work shows, however, that only twenty-five per cent of the heifers experimentally inoculated really aborted.

Any veterinarian who, without any attempt to cause abortion, has failed to observe a higher rate of abortions than that recorded by M'Fadyean and Stockman in their experiments, has had a very limited experience with the disease. Indeed, we see frequently in heifers in first pregnancy fifty to eighty per cent of abortions, even after the administration of supposed sure cures. We have re-

corded one instance where we administered abortion bacterins, which some regard as a reliable prophylactic agent, and yet eighty per cent of observed abortion followed. So we have observed over twenty-five per cent of abortion after the use of methylene blue, carbolic acid, and other alleged prophylactics of supposedly great value. Thus, we observe frequently a higher abortion rate where the most popular methods for controlling the disease are applied than experimenters are apparently able to induce experimentally.

It was claimed by M'Fadyean and Stockman that their experiment heifers were clean, that the animals had not been exposed to the contagion prior to their experimental infection. This was a mere hypothesis, incapable of proof or of disproof.

In our own experiment cited above, we had, according to ordinary standards, no evidence of infection prior to the use of the bacterins. According to our own standards, they were intensely infected and would have largely aborted had we let them alone, injected either living or killed abortion bacilli, fed methylene blue or administered carbolic acid.

We have frequently cited two contemporaneous experiments, technically one by the writer and the other by Dr. Moore. Dr. Moore caused large volumes of pure cultures of the abortion bacillus to be injected into the jugular veins of five pregnant cows. Each of the five cows aborted. The writer had equally large doses of the abortion bacillus injected into the jugular veins of six pregnant heifers. None of the six heifers aborted.

Applying the standard of observed abortions, the two experiments were hopelessly contradictory. It might also seem to some that the experiments had been improperly manipulated, that one of us believed one way and the other another way, and that each would prove his point regardless of method. The cultures used in each experiment were made in the same laboratory, from essentially the same strain and by the same man. Each group of cattle was kept on the same farm, fed by the same man, and handled essentially alike. The abortion cultures were injected into the jugular veins of all the cattle by the same man. Everything was all right and ran smoothly until an attempt was made to apply the standard of observed abortions in order to measure the effect of the experimental inoculations. Then came irreconcilable conflict. Either there was some radical error in the experiment or our standard of measurement was wrong. When the two groups of animals were

analyzed, it was found that during the prior year two of the five cows in Dr. Moore's group had aborted, two had been sterile or had aborted unseen, and one had calved. They came from a herd in which an abortion storm had raged. They had every right to abort without having been experimentally inoculated. Perhaps the inoculation intensified the infection and made abortion more probable. The six heifers were not known to have been exposed previously to the infection. According to our present views, they were almost certainly infected, but only mildly. Perhaps the inoculation increased their tendency to abort, but not sufficiently to cause an actual abortion. Taking each experiment group alone, some would have been sure from Dr. Moore's experiment that such inoculations would regularly cause abortion, or from our experiment, measured by the same standard, that the inoculation was powerless to disturb pregnancy. The experiments were correct: the standard for measuring them was wrong. According to our most recent researches, our experimental inoculation of the heifers probably induced serious infection, and, had the heifers been retained long enough for the development of this very chronic malady, disaster properly attributable to our experiment would probably have been revealed.

The standard for measuring our results was one which has not been applied in any other disease. In the experimental transmission of contagious diseases in cattle or other animals, we do not rely upon the death of an animal for our proof of the transmission of the disease. We do not diagnose the disease by the death of the animal. An animal may die from any disease. It might well be said that no disease is absolutely fatal, although some diseases have a mortality of very near one hundred per cent. In research work with other contagious diseases, when an experimenter wishes to produce disease he does not require that the animal which is inoculated shall die. In contagious abortion, however, the experimenter goes a step further. He inoculates one animal with what he believes to be the essential contagion and expects this to cause the death of another animal which is intimately related with the inoculated one. That is, he inoculates a pregnant cow or heifer, and, without killing her or producing serious disease in her, expects to destroy the life of a fetus *in utero*.

When an experimenter wishes to reproduce a transmissible disease, he regularly accepts as proof of such transmission, not

death, but lesions or certain distinctive symptoms. He expects to complete his proof by recovering from the tissues of the experiment animal, providing the microorganism is recognizable, the same organism as that which he has introduced. Preliminary to his experiment, however, he must have satisfied himself that the experiment animal is not already infected with the particular disease under study. In contagious abortion, we are not yet in a position to determine the freedom of an experiment animal from the Bang organism. We have no lesion which is generally acceptable to experimenters as conclusive evidence of the presence of the abortion infection.

The contagious abortion of cattle, being a chronic disease, may like other chronic diseases, produce a long and varied list of symptoms, or may produce none; and when the symptoms are present they are not highly distinctive of the one disease.

We do not need to produce the death of the fetus and its expulsion from the uterus in order to establish the place of the abortion bacillus of Bang in cattle abortion. It is no more necessary to cause the death and expulsion of the fetus in our experiments in contagious abortion than it is necessary to produce death of the experiment animal in tuberculosis and glanders. We do not prove, by causing the death of the animal, that we are working with the tubercle or glanders bacillus. We do not at all need to cause abortion in order to establish the character of cattle abortion. We have long had abundant evidence regarding the power of the abortion bacillus to cause the death and expulsion of the immature fetus. The evidence, wholly aside from the phenomenon of abortion itself, is so abundant and so conclusive that we are fully warranted in proceeding upon the basis that the abortion bacillus described by Bang is the fundamental cause of the disease of cattle so outrageously misnamed "contagious abortion".

If we study the question of the clinical diagnosis of contagious abortion, we find again that the frequency of abortion in a herd has generally been regarded as the principal basis for differentiation. If the abortions have been very numerous, it is contagious; if comparatively rare, it is accidental. In applying this standard of measurement, however, very few attempt to define what they mean by "frequent" or "rare". They fail yet more definitely when they conclude that frequent abortions prove the contagious character, while rare abortions indicate accident instead. In

acute infections, such as foot-and-mouth disease, the spread is very rapid, and if one animal having the disease has been placed in a susceptible herd of cattle it may reasonably be assumed that the contagion will spread rapidly and the symptoms will be unquestionable. In a chronic disease, however, we have no such criterion. The disease spreads slowly, it develops slowly, and it may involve any organ in the body, thus enabling the malady to produce an endless variety of symptoms. Some cases of white scours in calves are certainly due to the abortion bacillus. In some cases of arthritis in calves, we get pure cultures of the abortion bacillus from the joint cavities. In the pregnant female, according to our present understanding of the pathology of contagious abortion, the lesion imperilling the life of the fetus is fundamentally an inflammation of the uterus. This may occur in the non-pregnant animal, causing sterility. It is by far most common in pregnant cattle, where it may cause abortion or premature birth, or, persisting for a longer period of time, may cause tardy or difficult parturition because of the paralysis of the uterus. Once the fetus has been expelled, retained afterbirth which has long existed may come prominently into view. Following pregnancy and in continuation of the metritis of pregnancy, there may be pyometra, admittedly modified by subsequent additional infection, as a result of which sterility may assume a very serious aspect. Under these conditions, we necessarily have wide variations in symptoms, or rather in results, because there is extreme variability in the quantity, the quality and the duration of the infection in the uterine cavity. It is therefore unfair to measure the intensity or prevalence of the infection by one of these symptoms. We might be much more accurate if we could always see clearly the metritis of pregnancy, but during this period we cannot observe the disease clinically and must await the emptying of the uterus. Then, with the dilated condition of the genital canal, other infections may freely enter the uterine cavity, to complicate and becloud the problem.

Our symptoms are not clear. Certainly, however, we cannot afford to elect the one phenomenon of the death and expulsion of the immature fetus as a reliable standard for the measurement of the disease. The deficiency of this standard is not restricted to abortion, sterility and retained placenta or other disasters dependent upon the metritis or other disease of the female genital tract. It has recently been shown with great clearness that the

milk of many cows contains the Bang abortion bacillus. We are not at present in possession of adequate proof that the milk of any cow is wholly free from this infection. Yet the presence of the abortion bacillus in the milk has no immediate relation, so far as we know, with the death and expulsion of the immature fetus which may at the time exist in the uterus. The relation of the infection in the udder is with the infection of the new-born calf, through feeding upon the infected milk.

The agglutination and complement-fixation tests show very clearly also the futility of depending upon the death and expulsion of the immature fetus as our standard for diagnosis. In herds where the infection is intense, we find by these tests that the blood of a large percentage of calves, when not more than twenty days old, reacts strongly to the test for contagious abortion. So also does the blood of breeding bulls. The blood of many cows which do not abort reacts very strongly. Consequently, if we accept, as we must, the complement-fixation and the agglutination tests as having some degree of reliability, it becomes very clear that we cannot accept the phenomenon of abortion itself as a reliable measure of the infection.

In a yet more important respect this standard of measurement for contagious abortion fails. When we consider the question of the cure, prevention or control of contagious abortion in cattle and attempt to use the phenomenon of abortion as a standard of measurement, we find that it underlies and supports the errors and quackery surrounding the handling of this disease. A purveyor of quack medicines sells his alleged remedy to a breeder, with the promise that it will eliminate, check or control the one phenomenon of abortion, but does not represent that it will repress retained after-birth or metritis in cows or white scours or arthritis in calves or that it will have any favorable influence whatever upon the infection as a whole. If, after the quack nostrum has been given, no abortions follow, a cure is claimed upon the basis that the death and observed expulsion of the fetus constitutes the disease. Other results of the abortion infection continue unabated. They may even increase. In many severe storms of the infection, there are few observed abortions, but the metritis of contagious abortion is very intense, the calves very largely die from scours or pneumonia, the afterbirth is retained in many, and sometimes in nearly all of the cows. In numerous outbreaks, many of the cows die from septic

metritis. Pyometra or metritis occurs frequently, and many animals become incurably sterile. In spite of these great losses, the purveyor of the quack remedy claims that he has stopped the disease. The breeder believes also that the nostrum has controlled the malady and cheerfully subscribes to a misleading testimonial.

It is not quacks alone who mislead the people. Carbolic acid and methylene blue were recommended by capable and honorable veterinarians. They believed implicitly in the value of these drugs. Their belief was founded upon the false standard which they used in measuring the disease. In some of the herds where these drugs were first used, there was a decrease or cessation of the observed abortions. There may even have been some decrease in the intensity of the infection, so that possibly in some cases where these drugs were used there was less retained afterbirth and less sterility. These variations in intensity rise and fall in all herds, whether any remedies are applied or not. They have nothing whatever to do with the essential problem. The infection remains, and its power to do harm has not been importantly affected by the drugging.

Recently much has been claimed for the use of bacterins to control abortion. The philosophy of the use of these bacterins is not clear. Even when applying the observed phenomena of abortions as the standard for measuring the disease, the hypothesis upon which abortion bacterins are used is difficult to follow. Apparently those who believe in their value believe that they induce immunity, although the disease is a chronic one. They fail to appreciate the fact that a chronic infectious disease is chronic because the disease itself does not produce immunity. Thus far, we have been able merely to imitate nature and to provide an artificial immunity in some of those diseases which themselves induce immunity after one attack. Before they can arrive at their belief in immunity in abortion, they must create the hypothesis of vicarious immunity. They must believe that because one fetus has died from an infection, a subsequent fetus not yet generated is to be immune. If they would claim that it is the cow, not the fetus, which is made immune, they need still believe that the immunity is based upon the death and expulsion of a fetus, upon the disease of a fetus, and not upon the disease of the pregnant animal. This, again, is a vicarious immunity, in which, owing to the death of one animal from a given infection, another is rendered immune thereto.

If it is admitted, as we have long held, that the infection of contagious abortion is essentially universal, the use of bacterins would appear illogical because it would only be adding more of the same toxic substances which exist already in the animal and which constitute the principal power for harm. So long as we apply the false standard of measurement which we are discussing, we may readily select a number of instances where it appears that the use of bacterins has served an important purpose and has actually controlled abortion, but we may turn face about and examine other herds where the bacterins have been used in precisely the same manner and show, by the same standard, that they increase the amount of abortion.

Recently, after reading one of our publications, a veterinarian in a personal communication suggested that we were in serious error in holding that abortion bacterins do not and cannot control contagious abortion. He cited a number of herds where abortion had been severe and in which he asserted he had totally eliminated the disease by the use of bacterins. A little later, reading one of our published contributions where we had stated that retained afterbirth was simply one of the results of the presence of the contagious abortion infection in the uterus, he at once took us to task for this view. He was just then having a serious time with retained afterbirth. So far as we could determine, this was in the same herds where he had supposedly eliminated contagious abortion by administering abortion bacterins. This reminded us somewhat of an attempt to tamp into a hole more soft putty than the cavity would contain. As fast as it was tamped on one side, it would bulge above the surface on the other side. If he believed that he was controlling contagious abortion with bacterins, the contagious abortion bobbed up in the form of retained afterbirth. If then, by some *hocus-pocus*, he could tamp the retained afterbirth back, the disease reappeared as sterility. This he controlled by some vigorous punches with a steel rod in the vicinity of the cervical canal. Thus, by applying a false standard of measurement, he chases an *ignis fatuus* hither and yon, and the real condition of affairs never becomes tangible, is never attacked and never affected.

In another instance a veterinarian of high repute does not understand why cows in a certain herd should suffer and quite uniformly die from retained afterbirth. He is sure it is not caused

by contagious abortion, because none of the cows has been seen to abort.

When handling the disease, the application of this standard involves certain questions of vision. An embryo or a fetus may perish in the uterus at any time, and it may be expelled or it may not. If it perishes before the fifth month of pregnancy, there are usually none of those alleged symptoms of impending abortion. The embryo or fetus slips away unseen. The standard cannot be used as a measure in such a case. Again, in the later stages of pregnancy, there is almost inevitably difficult labor—the dystokia of contagious abortion. If the uterus is very badly inflamed, the fetus is extracted dead. It has probably died from the infection of contagious abortion. The animal, with some assistance in getting rid of the dead fetus, has aborted, but the abortion is not visible to most observers. Thus, in applying this standard of measuring the amount of contagious abortion in a herd there is an epoch of visibility which extends from about the fifth to the seventh month inclusive. On either side of this epoch, are two others, where abortion is essentially invisible. Consequently it is said that abortion occurs chiefly from the fifth to the seventh month of pregnancy inclusive. As a matter of fact, however, the death and expulsion of the immature fetus are clearly visible during this epoch and difficult to observe at other times.

Quackery has profited more and is profiting more today in connection with contagious abortion than with any other disease of animals. The underlying reason which makes this quackery possible and permits the great profits which quacks are reaping is the false standard for measuring the disease. If an able and perfectly conscientious veterinarian, measuring contagious abortion by the false standard we are discussing, states that methylene blue has controlled contagious abortion or has stamped it out of a herd where it has previously existed, and submits the data, we must accept the facts as stated. If a quack powders some dried codfish and sells it at a high price as a sure cure for contagious abortion, and a breeder administers it to his cattle, there may be no abortions seen for a time. Perhaps abortions do occur and are not seen, but that is not the point, according to the general standard of measurement. If no abortions are observed over a given period of time, the quack may publish the data. They are just as good data as those published in connection with methylene blue. If

the data are co-extensive and the percentages of abortion, according to the standard of measurement applied, are alike, the promotor of methylene blue has little right to criticize the purveyor of codfish. The evidence is perhaps just as sincere and the results when placed upon paper cannot be differentiated. There have been no abortions, and according to the standard of measurement that is the end. Neither of them has done any good or any harm.

If some eminent veterinarian states that he has assembled a herd of abortion-free cattle, selecting them by the agglutination or complement-fixation test of the blood, and that no abortions have occurred in the herd so assembled for one or two years, the assertion looks good upon paper, it is perfectly correct and perfectly honest. Another man of poor repute may assemble another herd of the same size and may administer regularly to that herd some secret concoction and for one or two years not a cow in that herd may be seen to abort. He may be able to sell his concoction at a lower price than the expert veterinarian can make the agglutination and complement-fixation test. Each arrives at the same result. The only difference perhaps between the two is that in the one case the breeder is misled because of an error, while in the other he is misled by design. We cannot, however, in all cases prove that there has been deliberate fraud. Thus quackery and charlatanism flourish side by side with error. The results of fraud and error are essentially the same to the breeder.

We cannot hope to aid the breeder in the control of contagious abortion in cattle until we place before him the truth in connection with the nature of contagious abortion. We must discard as rapidly as possible all false standards of measurement and must teach the breeder as rapidly as sufficient knowledge can be obtained the true character of this very destructive disease. When we have done this, the opportunity for the present large volume of quackery will disappear. No purveyor of quack remedies can flourish now by offering for sale an alleged remedy for tuberculosis. The people know better. The quack may prosper for a few weeks, as was recently observed in connection with human tuberculosis, but not for long. The more intelligent breeders, especially the breeders of pedigreed cattle, in America are beginning to learn something of the true character of contagious abortion. They have tried all of the alleged remedies in their sincere desire to escape from the

enormous toll which this infection is levying upon their herds. They have become thoroughly convinced of the insufficiency of the standard we have discussed for measuring the disease. The purveyors of "sure cures" for abortion and sterility are not getting their principal reward at present from the more progressive and intelligent breeders of pedigreed cattle. Such breeders have learned their lesson fairly well.

The live stock papers of America have recently taken an advanced stand and have largely discarded the phenomenon of the death and expulsion of the immature fetus as a measure of the prevalence of contagious abortion in a herd. They are turning with energy to the broader and more comprehensive definition of the disease and are advising permanent measures of breeding hygiene, expecting to wage perpetual warfare against this great infection.

It is interesting to observe that, broadly, the more intelligent breeders of highly pedigreed cattle and the editors of the leading live stock publications of America are apparently in advance of the average veterinarian in their view regarding the character of contagious abortion. It is to be sincerely hoped that veterinarians generally will soon see their way to discard the hitherto prevailing standard for measuring the intensity and prevalence of contagious abortion in cattle and adopt a more comprehensive view which will permit the recommendation of practical measures for the control of the most serious disease economically which the dairyman and cattle breeder are now compelled to face.

A recent government report states that the enrollment of students at the veterinary colleges of the United States at the last session, 1915-16, was larger than at any time since a record has been kept. There were enrolled nearly 3000 students—an increase of 442 over the preceding session. Of these, 734 completed the course of study and were graduated at the end of the session, or 36 more than were graduated from the previous session.

THE OPHTHALMIC TEST FOR GLANDERS: WITH A SIMPLIFIED METHOD OF PROCEDURE

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According to the Report of the Special Committee for the Detection of Glanders¹ which was presented to the fiftieth anniversary meeting of the American Veterinary Medical Association at New York, Sept., 1913, the following methods of testing for glanders were tabulated:

“Mallein Test.

- A—Subcutaneous
- B—Ophthalmic
- C—Cutaneous
 - 1—Cutaneous
 - 2—Dermal
 - 3—Endermal

Laboratory Diagnostic Methods

- A—Examination of Pus or Nasal Discharge
 - 1—Microscopic
 - 2—Cultural
 - 3—Animal Inoculation
- B—Examination of Blood.
 - 1—Opsonic Test
 - 2—Conglutination Test
 - 3—Precipitation Test
 - 4—Agglutination Test
 - 5—Complement Fixation Test”.

This list includes all of the known tests, that are considered of any value, both for field and laboratory work, irrespective of their relative merits.

While it is recognized that some of the above mentioned laboratory diagnostic methods are absolutely reliable and should always be used in obscure cases or for corroborative purposes, yet it is obvious that they can be carried out only in the laboratory by trained workers.

Therefore, for general diagnostic work and for field tests, one or more of the mallein tests must be resorted to.

Mallein, the substance found in cultures of the *Bacillus mallei* which is responsible for the supposed allergic reaction in animals

properly sensitized, was first discovered by Hellman and Kalning in 1891. The exact composition of the active principle of mallein, whether it be a toxin or a proteid extract, still remains unknown, although its specificity has been established beyond a doubt.

Raw or concentrated mallein, as it is now prepared, is a dark brown syrupy fluid possessing a distinct characteristic odor and usually giving a neutral or acid reaction. Originally it was made by extracting potato cultures with water or water and glycerin, but at the present time the method of Roux is followed; namely: by growing one or more tested strains of *B. mallei* in glycerin peptone bouillon at 37.5° for about six weeks. At this stage the culture is usually sterilized by the addition of a sufficient amount of trikresol or some other preservative and filtered; after which procedure the filtrate is concentrated to one-tenth of its original volume with as little application of heat as possible.

During the past few years extensive experiments have been carried on in several countries to determine, if possible, which of the mallein tests would give the most satisfactory results for the general diagnosis of glanders.

According to Mohler and Eichhorn² "In judging a method which would be the most satisfactory for the diagnosis of glanders, various things have to be taken into consideration, but especially the reliability of the test. It should be convenient, the results should be manifested as early as possible, the reaction should be distinct and well marked, and, probably the most important of all, it should be possible for the practicing veterinarian to apply the test. The last condition must be seriously considered since the standing of the veterinarian in the community and the confidence of the public in his work would be more manifest if in suspected cases he could personally decide on the diagnosis instead of having to depend entirely on the results of serum tests made at some distant laboratory."

It seems to be the concensus of opinion among most of the authorities, both in this country and abroad, that the subcutaneous mallein test is not as reliable as was first thought and that the ophthalmic test is by far to be preferred.

According to Mohler and Eichhorn² "There is no question but that the subcutaneous mallein test is one of the valuable diagnostic agents for glanders, but no one can any longer deny that failures from this test are more numerous than are desirable. As a matter

of fact, the uncertainty of the results from this test caused numerous investigators to seek some other methods which might replace the subcutaneous mallein test. Besides the failures resulting in this test, the technic of execution of the test, together with the time required for the conclusion of the test, makes it unpopular for many veterinarians and sanitary officers."

In favor of the ophthalmic test the following authorities are quoted: Mohler and Eichhorn² "The popularity of the test is rapidly gaining wherever it has been applied, and among its supporters we find at the present time the greatest authorities on the subject of glanders and on clinical diagnosis."

"Its practicability is apparent, and its use in the control of glanders appears to be now an absolute fact." The method was thoroughly tried out by the Bureau of Animal Industry and from reports in more than 18,000 cases the results from all sources were uniformly satisfactory.

The test has been officially recognized in several of the foreign countries as well as in Canada and in the United States. In a report of Mohler and Eichhorn² they say, "In the United States the Bureau of Animal Industry, in consideration of the favorable results obtained, has recognized the method of diagnosis for interstate shipments of equines."

Schnurer, probably the greatest authority on glanders, gives the following report:¹⁰

During the period 1910-1913, 93,352 ophthalmic tests were carried out in Austria (excluding Galicia and Bukowina); out of these 341 glandered horses gave positive results in 88.8 per cent of cases, doubtful results in 7.6 per cent and negative results in 3.5 per cent. Out of 75,879 healthy horses 99.6 per cent gave negative reactions and 0.34 per cent positive reactions. The negative results in the glandered horses (3.5 per cent) are attributable in part to the fact that the horses were not only tested once or were tested only a few days before death, and probably in part to errors in judgment and mistakes in the post-mortem diagnosis."

He also says, (1) "Glanders can be stamped out by the slaughter of clinically affected animals and of animals recognized as diseased by means of a test. Immunization is at any rate, superfluous.

(2)—The most satisfactory test is one that does not involve the intervention of a central authority, yields reliable results within

a short time (12 to 24 hours) in the hands of persons who are not required to be specialists, is easy to apply and to base a decision upon, is suitable for application on a large scale on the frontiers, can subsequently be verified, and is comparatively cheap.

(3)—The serological tests (agglutination, complement fixation, precipitation, conglutination, Abderhalden's test and anaphylactic reaction) do not fulfill these conditions either singly or in combination with each other, because they cannot be carried out without the intervention of a central authority.

(4)—The ophthalmic mallein test (conjunctival reaction) carried out with a reliable concentrated mallein painted upon the eye with a brush, swab, glass rod, or some other instrument, and not dropped into it with a pipette or drop bottle, satisfies all the conditions mentioned."

In the Report of the Special Committee for the Detection of Glanders, mentioned previously, the following may be found: "In deciding upon a method which would be most satisfactory for the diagnosis of glanders; the simplicity, reliability and trustworthiness of the method must be above reproach.

The results should manifest themselves as soon as possible, the reaction should be well marked and distinct and easily applicable by the average practicing veterinarian.

A test with these requirements places a test into the hands of the practicing veterinarian along with which the standing of the veterinarian in the community and the confidence of the public to the veterinarian is brought into closer relationship, in that it enables the veterinarian to personally decide on the results of the test.

The ophthalmic test not only meets all these requirements, but is without doubt the most convenient diagnostic method at our command.

Its reliability compares favorably with any of the other available tests.

The reaction is usually distinct, and doubtful or atypical reactions are rather infrequent.

The ophthalmic test does not interfere with subsequent serum or other mallein tests if such are deemed necessary.

The ophthalmic test should be recognized by state and federal authorities since its reliability can no longer be doubted.

In all atypical and doubtful cases of the ophthalmic test the combined complement fixation and agglutination or subcutaneous

mallein tests should be utilized for confirmation. Such a procedure should minimize the failures and assure the best results in the control of the disease in a single stable or in an entire community."

A comparative investigation concerning the various biological methods of glanders diagnosis was undertaken, in Russia, by a committee under the direction of Prof. Dedjulin on 245 healthy and 6 glanders-infected horses, with the following results:

Ophthalmic reaction	0	positive	(0% failure in reaction)			
Complement fixation method	0	"	0%	"	"	"
Agglutination	4	"	2%	"	"	"
Subcutaneous mallein reaction	4	"	2%	"	"	"
Precipitation reaction	11	"	5%	"	"	"

The ophthalmic and complement fixation reactions proved the most reliable methods in healthy horses.

In the infected horses all the methods gave positive reactions.

Dedjulin thus summarizes the results of his investigation, "That the malleinization (ophthalmic reaction) is to be regarded as the most efficient and for practice the most convenient aid for the diagnosis of glanders."

"It apparently yields no more failures in diagnosis than other methods, but it is decidedly simpler, and its execution can take place independently of the laboratory; this latter is of no little practical significance. Moreover, the judgment of results of this reaction seldom offers occasion for disagreement in opinion."

The writer, in preparing the material for the simplified ophthalmic test, followed the work of Foth⁴, Wladimiroff⁵, Fröhner⁶, Reinhart⁷, Meissner⁸ and others who used a desiccated precipitated mallein. This was made up by them into a watery solution and used in a similar way to the raw mallein, with like results. Comparing the dry purified mallein with the raw mallein, Mohler and Eichhorn², state that "The advantages of the use of one as compared with the other of these forms of mallein for the eye are not marked, as equally good results were obtained from the application of both forms of this product."

The usual method of preparing the dessicated mallein is to precipitate the raw mallein with several volumes of absolute alcohol, wash the precipitate with ether and dry *in vacuo*.

Taking this as the point of departure from all preceding methods, the writer moulds the purified mallein with milk sugar, which is a soluble, non-irritating and harmless base, into small tablets, in

such a proportion that each tablet shall contain the exact amount of mallein required for one test. Instead of dissolving the tablet in water prior to its application, as has previously been done with desiccated mallein, the tablet is placed directly into the conjunctival sac at the inner canthus of the eye and there allowed to remain. The tablet will soon (one to three minutes) dissolve without apparent discomfort or annoyance to the animal and without an irritating effect upon the conjunctiva. The mallein which is thus set free, produces typical reactions similar to those recorded as the result of the instillation of the raw mallein, or the solution of the dried mallein.

Soon after this material was first prepared and tested, Meyer⁹, from the Laboratory of the Pennsylvania State Livestock Sanitary Board, reported his results with desiccated mallein, which was the first report on the use of desiccated mallein, in this country. Meyer prepared his "Mallein Siccum" by precipitating the raw concentrated mallein with 30 parts of absolute alcohol. The writer, who used a much smaller percentage of alcohol, has found that it is not necessary nor desirable for practical purposes, to use as much as 30 parts of alcohol.

Meyer concluded after a thorough test of 210 horses with his desiccated mallein that "The conjunctival test for glanders is very reliable. It can, in a short time, without large expense, be applied by every practicing veterinarian and will permit the untrained to make a diagnosis of glanders with the greatest possible accuracy."

The advantages of the method proposed by the writer, for the general diagnosis of glanders, are evidenced by the fact that it fulfills the requirements of a most satisfactory test as suggested by Schnurer, Mohler and Eichhorn and others, while the material itself, being composed of desiccated mallein moulded into a convenient form, is extremely stable, can be handled with impunity and placed directly into the conjunctival sac without a previous solution in water.

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OBSERVATIONS ON THE TREATMENT OF FISTULOUS WITHERS*

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In the treatment of these cases the first thing to consider is the value of the animal. A horse that a dealer will ask \$200 to \$250 for will not as a rule bring the producer over \$150. Generally it takes an extra good horse to sell for \$150 on the farms. The United States Department of Agriculture has placed the average value of horses at \$90 to \$100. Lately they have raised it to \$139. In my opinion this is far too high. One hundred dollars would be much nearer their sale value. During my first experience in a veterinary hospital I was told the desperate treatment necessary for the relief and recovery of animals affected with fistulous withers. In the eradication of pipes or the walls of old sinuses, the most severe caustics such as arsenic, mercury, turpentine, chloride of zinc, silver nitrate, actual cautery and so forth were recommended and the saw and chisel for decayed spines of the dorsal vertebrae. Also the most thorough washing daily or irrigation with disinfecting solution or cold water. Most of the hospitals at that time had a ring in a post or stocks, or both, where horses with fistulous withers were roped with heavy halters and other means of restraint and were cauterized, washed, syringed, probed and tortured according to the knowledge of each individual veterinarian. When I began practice in my present location I treated just one case following this line of treatment and promised myself I never would treat another unless I could find or invent some more successful and humane treatment. I have seen these cases under treatment in numerous prominent veterinary hospitals and at the end of a year the lesions were worse than when the treatment was commenced. Every time the cavity was cauterized a pipe could be pulled out the next day or two followed by streams of pus for a week or two when the treatment would be repeated indefinitely until the patient was a physical wreck and had to be destroyed as an act of mercy. A bill of several hundred dollars was created on a worthless horse; the owner was sore and disgusted and the veterinarian was discredited for all time. After getting rid of

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my first case, I refused to treat any more of them for several years. Finally, at the solicitation of an owner, I operated on another one on his promise to take care of it himself. I advised him to wash it out occasionally. On visiting his farm in about a month I asked him if he had kept the cavities syringed out. The owner replied he had syringed it out once and it was so much bother he had quit. On seeing the patient I found she had nearly recovered. I immediately injected some colored water and, when the patient made a complete and permanent recovery in a few weeks more, got credit from the owner for curing her.

Shortly afterwards I saw another case that had been under treatment some time and as a last resort they fastened the horse and poured the cavities full of boiling soft soap. The old horse broke loose, ran back in the woods and as the owners were completely discouraged and thought he was worthless, they left him there. Late in the fall when he came up for something to eat he had made a complete recovery. That same winter while buying a carload of horses at Morrison, Illinois, I saw a big colt in the corn-stalks with extremely large swellings of the withers and asked the owner why he did not get someone to treat it. He replied that a veterinarian would keep it sore forever. He was going to cut it open and pour in a can of fistula cure and it would be well in short order. On returning there several months later I found the colt had completely recovered and the owner told me he did not have to pay any horse doctor either.

It is a very simple matter to realize that the reason these cases recovered was because after they were once opened they were afterwards let alone; there is no especial virtue in soft soap or Fleming's fistula cure. If the owner had had twenty cans of hot soap enough and used them he could have kept them from healing for all time. Likewise the reason the others did not recover was because of the caustics and treatment they received.

Drs. Williams and Frost have developed two or more new operations which mark a tremendous advance in the treatment of these conditions, from the fact that they eliminate both caustics and bacterins. They do, however, describe very complicated, difficult and dangerous operations for the relief of this condition. They also mention a mysterious fluid originating from some cause unknown to them in the fenestrum of the ligamentum nuchae as the predisposing cause. Of the atypical cases which they describe

as constituting about 3% of the whole, I have seen very few, and they responded nicely and quickly to treatment.

Very little horseback riding is done nowadays and ill-fitting riding or harness saddles cause very few fistulas at the present time. Occasionally we still have some fractured spines of the dorsal vertebrae to deal with. My experience has been mostly with the class they describe as typical and I cannot see why they separate them from the others on the ground that they are not due to mechanical injury. In all the cases I have seen in which I could trace the history I considered every one of them due to a mechanical injury. There is no essential difference that I can determine between a shoe boil, a serous abscess from a collar bruise on the lower part of the shoulder or what they describe as a typical case of fistulous withers also caused by an ill fitting hame collar with a heavy tongue hanging on the neck of a soft green horse. All these lesions contain the same serous fluid in the early stages and all of them have the same tendency to spontaneous recovery if the objects bruising and irritating them are eliminated immediately. In fact it is safe to say all of them will recover spontaneously if recognized in the early stages and relieved of irritation or bruising at once. All of them, if neglected, contain in turn the pale yellow tough discoid masses and all of them (provided suppuration does not occur) develop into fibrous tumors under sufficient irritation in time. It is possible the fluid in fistulous withers may be thicker and darker colored and that some substances from the lig. nuchae may cause this difference.

Not all of them result from collar bruises. I saw two colts that developed them from fighting flies and rubbing their necks against a limb of an apple tree. Also a young team that had a post in the stall between them which they would jam against and each of them had a fistula on the side next to the post. Most of mine, however, have resulted from collar bruises, coincident with the working of inferior green and young horses on manure spreaders, corn harvesters and binders.

If you accept these views of the etiology of fistulous withers the treatment is a simple matter. If recognized in the very early stages, quit working the horse in a hame collar; use a breast collar and bathe with cold water and in a couple of months complete recovery takes place.

If, however, there is any considerable swelling it is best to operate at once. Bearing in mind that you have a horse in most cases that is not worth over \$100 if he was sound, a treatment in proportion to his value that will leave the owner some equity in the animal is the first consideration. Also bear in mind that you have neither pipes, sinuses, dead tissue or fistulas to consider in the early stages, but simply a serous abscess and that it makes no difference if the serosity contained therein originates in the fenestrum or gravitates to it; all you have to do is let it out. No expensive equipment or elaborate technique is necessary. The essentials are a sterilized knife and a nose twitch. Have an attendant hold the twist, disinfect the shoulder, pick out the most prominent part of the swelling an inch or two above the scapula and about half way from the top of the 5th dorsal vertebrae and anterior angle of the scapula. Plunge the knife in the tumor about two inches and in one sweep bring it down in front of the anterior angle of the scapula into the neck. Repeat the cut on the other side and force your knife through the neck to the first cut. Wash out the fluid, calcareous particles and discoid bodies if there are any with any disinfecting or antiseptic solution and let your wound alone thereafter and he will get well, I believe, quicker and better than from any other operation or method. I may say further that there is never any hemorrhage that will not take care of itself. The wounds are usually about three inches in length but may be six inches in some cases and always heal without leaving unsightly scars. If no caustics are used there is very little suppuration. Further the horse can go to work the next day in a breast collar and do his ordinary work.

There are two essentials to maintain after the operation. 1st. The wound must be left alone, no meddling by the owner or veterinarian, and 2nd, under no circumstances should a hame collar be used until after all the swollen, bruised or inflamed tissues have fully recovered. Further, in all scar tissue we have necrosis and secondary abscesses and these locations are no exception to the rule. Occasionally small abscesses will develop in the scar tissue in six months or a year. They are usually superficial, small and break of their own accord and require no treatment.

There is one other point I wish to speak about and that is the impatience of the owner. In about a week he wants to know why it has not healed. All serous abscesses are slow to heal and in this

location they are slower than any where else. About the time it is making good progress the owner employs another doctor. In a few weeks the fistula has healed and the owner comes around and tells you how quickly the patient recovered after he used the other man's medicine. That if he had employed him in the first place his horse would have been well in one-third the time. That your treatment was no good and he will not pay you but will see his lawyer and decide if he will sue you for damages. About the only safe way to treat these cases is to collect your fee in advance and have the owner post a forfeit in case he does not follow instructions or has anybody else meddle with it in any way. Since adopting this line of treatment the recoveries in my practice have been 100%. The labor has been not more than 1% compared with previous treatment and most horses have earned \$100 in the time in which they would have been in the hospital. No operating tables, drainage tubes or packs are required. The exercise these cases get in a breast collar assist the discharge of fluids and hastens the healing process. I have seen several of these so-called fistulous withers that were left until they broke of their own accord that never had any treatment of any kind that recovered rapidly and permanently.

I wish to call your especial attention to the fact that in my experience the cauterizing, washing and syringing that I have seen done never accomplished anything but retarded recovery. This simple operation which does not take over five minutes to complete has been successful in about 150 cases in my practice and instead of dreading these cases, they now constitute the easiest and most profitable operations I have, providing there is no meddling or treatment after the operation. We have many recovered patients in this section that the owners will be pleased to show at any time.

VALUES OF FARM WORK HORSES. Estimates obtained by the U. S. Department of Agriculture from about 150 owners indicate that the farm work horse is considered to be in his prime shortly after six years of age, and that even though still perfectly sound, he has declined in value about one-half from the maximum when between 14 and 15 years. The estimates were made on a basis of a maximum value of \$250 and covered values by yearly steps from birth to 16 years of age.

PRACTICAL DAIRY INSPECTION*

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Although dairy inspection has been in vogue for many years, a satisfactory state of perfection has never been reached. The national state and municipal governments, as well as the dealers and consumers of milk, are realizing to-day more than ever before the necessity of producing clean, wholesome milk, which is almost universally consumed in a raw state. The dairymen's unsanitary methods, poor equipment, together with the lack of scientific knowledge have brought about the necessity of dairy inspection.

This inspection has been carried out along different lines, among which may be mentioned, an annual inspection tour in which an inspector visited the dairies once each year ascertaining the existing conditions and possibly scoring them according to some score card or other. No effort at all was made to remedy any undesirable conditions which existed, no suggestions were offered, the dairymen were rarely consulted and no improvements were therefore made and surely none could be expected. This method was soon modified by having the inspector visit the dairies at least once each month, giving suggestions for improvements, going over the score card with the dairymen, pointing out to them the reasons why certain changes in their equipment and methods would be beneficial, thereby increasing the quantity of milk and improving the quality thereof. It is wiser that all inspectors of dairy farms should be veterinarians and they should have had previous training in the production and handling of clean milk.

Great care should be exercised in scoring dairies giving credit only where credit is due. One of our greatest difficulties now encountered is the correction of careless or we dare say dishonest scoring where the inspector gives the dairymen credit for something they do not deserve. By such scoring the inspector neither gains the respect and confidence of the dairymen nor does he secure improved conditions. In order to be a successful inspector, one should be a judge of human nature, for the secret of success lies in gaining the confidence of the dairymen. It is much easier to lead a man than it is to drive him.

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A more practical dairy inspection includes a physical examination of the herds by a competent veterinarian who is not only honest with himself but with the dairymen. Whenever an animal is detected which is dangerous either to the milk or other animals in the herd, it should be removed as soon as possible and the nature of the trouble should be explained to the dairyman so clearly that he will see the necessity of removing this animal not only for the effect it will have on the production of wholesome milk but also for the protection of the remainder of his herd. In this way he will not only feel satisfied that this animal must be removed for his own benefit but he will also be able to detect the same trouble which might hereafter appear in his herd without the necessity of having a veterinarian call his attention to it. By this method the dairyman is satisfied, the danger is removed without the slightest friction or discontent and at the same time the dairyman will feel that the veterinarian was working for his best interests.

In order that a dairy herd may be brought to a maximum of efficiency, it is necessary that it should be provided with comfortable quarters which are sanitary and convenient. In the first place the stable should be located on elevated ground with good natural drainage. Poultry houses, privies, hog-pens, uncovered cesspools, manure piles or pits or any surroundings which pollute the stable air and furnish breeding places for flies, should not be near the cow stable. It is also important that the barn yard should be well graded and drained. An ideal site for a barn yard is on a south slope which drains away from the stable. If the barn yard is inclined to be muddy, the cows carry mud on their legs and feet to the stable where it dries and then drops upon the cow beds causing them to become dirty and dusty. When this condition exists, any movement of the cows causes the air of the stable to become saturated with dust, thereby exposing the milk to a dirty atmosphere at the time it is taken from the cow.

The floors of the stable should be hard, tight and easily cleaned, at the same time they should not be slippery, thereby causing the cow inconvenience. The gutters should be deep and wide enough to hold all the excrement and should be perfectly tight, not allowing any liquid matter to saturate the ground underneath. Cement seems to be the best material for the construction of stable floors and of late years is most commonly used. At the present time some experiments with a mixture of two parts of sawdust and one part

of cement are being tried on the cow beds. This is supposed to have all the advantages of the cement floor and in addition, is warmer because it is a poor conductor of heat and is not so liable to become smooth and slippery.

While it is desirable to have ample air space in the stable this feature is not so important as adequate ventilation. Every cow stable should have sufficient ventilation to keep the air fresh and pure and at the same time, not expose the cows to injurious drafts or keep the stable at too low a temperature. Disagreeable odors at any time indicate imperfect ventilation.

An abundance of light is necessary, care being taken to see that it is well distributed and not obstructed in any way. Thoroughly whitewashed stables help to make the stable lighter.

In this day and age it is needless to say that an abundant supply of pure, clean water is essential in the dairy.

One of the most important parts of the dairy equipment is the milk house. It should be convenient to the stable but so placed as to be free from dust and stable odors. The ideal place for it is on a well drained spot away from any source of contamination. The floor of the milk house should be properly graded and water tight. There should be sufficient light and ventilation and during the summer months, all openings should be tightly screened so as to make it cat, rat, bug and fly proof. Milk racks should be provided in the milk house for the milk utensils when not in use.

All utensils which are used in the handling of milk should be made of durable, smooth, non-absorbent material. Avoid all utensils which have roughly soldered seams, complicated parts, crevices or inaccessible places which are hard to clean properly. Milk pails of small mouth design—openings not greater than eight inches, permit the least amount of foreign matter to enter the milk at the time of milking.

One of the things most often neglected in the average dairy is the milk stool. During my experience of the past ten years I have seen many varieties used, such as old pails, school-house seats, boxes, kegs, etc., which were invariably in a filthy condition. A metal stool is the most satisfactory type available because this can be readily cleaned and sterilized if necessary but a very cheap practical stool can be made of wood provided that all surfaces are smooth and painted to close the pores in the wood, thereby furnishing a seat that is sanitary and easily kept clean.

But the equipment as we have discussed it, is not the most important factor in the production of clean milk. The point I wish to emphasize most in the production of clean milk is not particularly the equipment but the methods employed. It is possible to produce sanitary milk with a poor equipment and good methods and it is also possible to produce unsanitary milk with a good equipment and poor methods; of course it is most desirable to have both methods and equipment up to a high standard.

In the first place whether the equipment is good or bad it must be clean. The interior of the stable must be thoroughly whitewashed, no cobwebs should be tolerated, walls, ledges, windows and floors must be free from dust and foreign matter; in fact the cow stable should be a kitchen because we are here preparing an animal product for human consumption.

The cows should be clean, all hair on udders, flanks and tail (except the brush) kept short and all visible dirt removed from the cow, because it is very difficult to obtain clean milk from a dirty animal. It has been proven by experiment that a cow will more than repay the dairyman in the extra amount of milk given for the time expended on her with a currycomb and brush. Brushing and currying a cow stimulates surface circulation, makes the cow feel better and when she feels good she shows it in the milk pail. Just previous to milking, the udder and teats should be thoroughly wiped with a damp cloth. A damp cloth tends to cause the particles of dust to become sticky and adhere to the udder, not allowing them to drop into the milk during the process of milking. It is advisable to discard the first stream of milk from each teat because it removes from the teat canal large numbers of bacteria which might be lodged there and also enables one to detect thick milk.

No cow manure should be allowed to accumulate within the cow stable or yard and it is good farm practice to haul it to the field daily to prevent loss by leaching.

The milk should be strained in a milk house or at least in a room with a clean atmosphere and never in the cow stable. The milk utensils should always be rinsed with cold water immediately after using and then washed with clean hot water and washing solution after which they should be thoroughly rinsed with boiling water, and allowed to dry without wiping with a cloth or towel. If they are hot they will dry readily.

One of the most essential factors in the production of sanitary milk is proper cooling. We all know that the number of bacteria increase very rapidly when milk is kept at a temperature of 60° F. or above. One of the greatest secrets in keeping the bacterial count low in milk is cooling it at as low a temperature as possible immediately after it is taken from the cow and keeping at a low temperature until it is consumed. The most practical way of accomplishing this is by constantly keeping a good supply of ice in the cooling vat, twenty-four hours of the day, protecting it with a tight wooden cover over the cooling vat. In this way the dairyman always has ice water to cool his milk and we know that the milk is stored at a low temperature. In some localities where there are springs of cool running water, it is practical to properly cool the milk without ice.

One of the great fields now opening up to the veterinarian is along the line of practical dairy inspection. I do not mean simply the act of making a physical examination of the animals but the opportunity to recommend changes which should be made to improve the quality of the milk, other than those respecting the cow itself. All private practitioners can improve their standing in their own community by just such practices. Their value to the farmer is not alone in treating his sick animals but also in preventive medicine by suggesting better sanitary conditions. He is also, by not only prescribing for the sick animals but also by observing existing conditions, making valuable recommendations and may be able to impress upon the farmer that he is working for his best interests and thereby gaining for himself an envious standing in the community. He soon becomes an invaluable factor to the people at large who will soon recognize his ability as a practical man working for their welfare as well as a doctor of veterinary medicine. A veterinarian can greatly increase his value in the community by informing himself along modern agricultural lines so that he will be able to talk intelligently about general farming—a subject in which the farmer is, of course, interested.

It seems to me that the local practitioner should assume the responsibility of seeing to it that his community is supplied with milk produced under the best sanitary conditions and impress upon the people the value of having a veterinarian inspect the dairies supplying them with milk, thereby creating a remunerative position for the veterinarian as well as doing genuine public

service. He has not only created a position which means money to him but has become a great benefactor which in itself lightens his tasks and makes him feel that he has been of some real and lasting value—a monument which neither moth nor dust can corrupt nor ruthless man obliterate.

INTRADERMAL PALPEBRAL TUBERCULIN TEST*

BESNOIT AND CUILLE

Translated by H. J. WASHBURN, Washington, D. C.

TECHNIQUE. We give at first, for those veterinarians who have not yet practiced intradermal injections, the technique which we have employed. It is based upon the intradermo palpebral mallein test described by Drouin and Nandiant, now regularly used in the army and in no material manner differing from the method of Moussu.

The necessary outfit contains: a metal syringe of 1 c.c. capacity, graduated to tenths, with visible plunger and furnished with a fine, short needle; also a supply of the ordinary tuberculin sufficient to give each animal 1/5 c.c.

The choice of the needle is a matter of real importance. In order to overcome the great resistance of the bovine cutis without breaking, it should be nicely sharpened, short and a little stronger than needles used in the mallein testing of horses; the most satisfactory dimensions are 0.7 to 0.8 m.m. in thickness and 15 m.m. or more in length. There should also be an extra supply of needles for replacing any that may be broken by sudden movements of the head of the subject.

Except for cattle which are untamed, vicious, or very strong, the test may be applied with the assistance of only a single helper. The latter grasps the cow by one of the horns with one hand, and by the nostrils with the other, and lightly turns the head in such a manner as to bring the eye chosen by the operator, to the upper side, thus making everything convenient for the injection.

The injection is made into the dermis of the lower lid at or near its middle and 10 to 15 m.m. from the edge of the lid. The operator seizes a fold of the lid at this point, between his left

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thumb and the index finger and with the right hand, in which is the syringe, with piston set to deliver one-fifth of a c.c., placed upon the head in such a way that the hand will follow all movements made by the animal's head, inserts the needle very superficially into the dermis parallel with the surface of the skin, and for a depth of 2 to 3 m.m. The injection is then made with the right index finger while the thumb steadies the syringe; because of the resistance of the tissues the tuberculin will form a small nodular swelling about the size of a lentil, within the track of the puncture.

With a very thick lid it is sometimes difficult to grasp a suitable fold. The fingers may in such cases be placed under the lid in such a manner that upward pressure will produce a prominence of the skin along the lower lid, and the injection may be made into this elevation.

The injection, in principle, should be strictly intradermal. However, if the needle passes into the subcutaneous tissues, producing a subcutaneous injection, no interference with the results will occur. Following Drouin and Nandiant, we have confirmed this statement in its relation to intradermal mallein testing, and M. Moussu has made intradermal tuberculin testing the basis of a great variety of tuberculin tests, and it now appears, has given the intradermal method the preference. This detail is a matter of great importance for it overcomes one of the chief objections of the adversaries of intradermal testing, who have pointed to the difficulty of making the injection within the skin without penetrating the subcutaneous tissues.

Altogether the manual operation is simple and may be rapidly executed, one operator with a single assistant being able to apply the test to one hundred cattle in an hour.

The dose to be injected, as we have stated, should be $\frac{1}{5}$ of a c.c. In our first tests we used $\frac{1}{10}$ c.c. The results obtained were clear, but less reliable probably than those resulting from the use of $\frac{1}{5}$ c.c. However, with the latter dose the test approaches the classic subcutaneous test, and there is in consequence a risk of producing an elevation of temperature with all its inconveniences.

RESULTS. The local reaction appears in about 12 hours after the injection, increases gradually, and attains its maximum at about 48 hours. It soon begins to recede, disappearing usually by the 4th or 5th day. On certain cattle, traces of the reaction may be seen as late as the 6th or 7th day. The examination of the eyes for

the determination of the results of the test should therefore take place during the course of the second day.

Upon healthy animals no results will be produced; sometimes a slight edematous engorgement of the treated lid may be observed. It appears immediately after the injection but only lasts for a few hours. With tuberculous cattle, on the contrary, a voluminous swelling invades the lower lid, and in some cases even extends along the sides of the face to the zygomatic arch. The reacting lid is infiltrated, edematous and swollen. Over its surface the skin is tense, and without sensitiveness. The palpebral opening is reduced $1/4$ to $1/3$ in size by the edema, and as very correctly stated by M. Moussu, "the eye is in a pocket."

The conjunctival reaction is less marked than in case of mallein intradermo-palpebral reaction to glanders. The eye sometimes contains a few tears and the conjunctiva may appear injected, but a purulent discharge, such as is frequently seen in reactions to the test for glanders, is rarely observed.

It is unusual for the upper lid to participate even feebly in the reaction, although such action has been noticed.

The local reaction is sometimes accompanied by a slight thermal rise, which may attain .8 degree to 1.0 degree during the 24 hours which follow the injection. It is inconstant, but may occasionally be of use in deciding some questionable result.

Incomplete or indecisive reactions are exceptional; but in case of doubt a new test may be applied to the opposite eye. The reaction to such second test is usually more pronounced and occurs more quickly, due no doubt to an increased sensitiveness of the organism because of the first test. In case of the second intradermo-palpebral test proving indecisive, one may still resort to the subcutaneous method, as the small amount of tuberculin used in the intradermal tests will not have any effect upon the response to a subcutaneous test. The intradermo-palpebral test may, if necessary, be repeated at short intervals almost indefinitely. The local reaction under these conditions occurs more and more quickly but does not fail to appear. Certain facts, which we have thus far been unable to study to our satisfaction, seem to show, contrary to statements previously made, that a subcutaneous injection with tuberculin will not prevent a local reaction to a subsequent intradermal injection, even if made on the following day. It will only cause the reaction to occur much earlier. We purpose to verify

in their relations to tuberculin the claims which Lanfranchi has made in this regard concerning the action of mallein.

No difficulty is presented in reading the positive reactions. It is only necessary to examine both eyes to determine the degree of variance between them through comparison of the swollen reacting eyelid with the other which has remained normal.

ADVANTAGES. After the statements just made by us the advantages of the intradermo-palpebral tuberculin test over the old subcutaneous method must be evident. They have been shown many times, particularly by M. Moussu, and we know of no better statement of comparison between the two methods than the one made by him.

Among the inconveniences of the subcutaneous method, the ones having inherent difficulties are the thermometric readings and their interpretation as well as the conditions material to the test. They are: the great amount of work necessary in reading the temperatures; the possibility of making an error in their reading even when well taken, and the results of badly read temperatures; the false results given to results through premature or delayed reactions; the classic delays; the uncertain reactions in which the temperature approaches but does not reach the point of condemnation, leaving uncertainty as to the proper disposition of the animal; the necessity of keeping the cattle stabled during the test even though they are cattle that have been running at pasture, or animals that are kept for work, this change in daily routine being sometimes sufficient to produce unexpected thermal variations; the impossibility of applying the test to feverish animals; the obligation of reading results at exact hours under the risk of making a serious mistake in the test; the effects of outside heat, the drinking of cold water, etc., upon the temperature of the animal during the test.

Other objections, less striking, but perhaps more important, touch the interest of the owner; they are: lessening of the flow of milk; danger of producing specific mammitis in the reacting cows; and finally the danger of aggravating the disease in cattle that are already affected.

On the contrary, the intradermo-palpebral method presents many valuable advantages. To the veterinarian they are: no necessity of taking temperatures; no chance of error in reading temperatures because the temperature reactions are established

automatically; no obligation for operating at any fixed hour; possibility of testing cattle that are feverish; possibility of repeating test immediately in case of uncertain results; no time lost in testing a large number. To the owner the advantages are: less disturbance of daily routine is required; it is not necessary to move the helpers from place to place; all cattle in a herd may be tested at one time, whether kept at pasture, or in the stable, and may be injected any moment in the day; little if any check to the flow of milk; no danger of producing mammitis; no danger of aggravating a tuberculous condition should such be present; possibility of retesting at short intervals, a matter which is of great importance in the eradication of the disease from an infected herd.

CONCLUSIONS. 1. The intradermo-palpebral tuberculin test has a value at least equal to that of the subcutaneous tuberculin test.

2. It may be executed simply and rapidly and without the enormous labor demanded by the subcutaneous test and without the too frequent errors which accompany it.

3. We are convinced that for future research in the diagnosis of tuberculosis in current practice, it should be substituted for the subcutaneous method, which should be reserved exclusively for the control of uncertain results.

These conclusions impress themselves by all of the evidence. Will they be adopted? Alas, they will encounter the indifference, inertia and routine spirit which in science as in everything else opposes innovations even those that are most justified. We think nevertheless that the experience gained by our brothers in the army in the use of the intradermo-palpebral mallein test, will convince them of the value of this technique and will act as a powerful aid in diffusing a desire to use the intradermo-palpebral tuberculin test in the diagnosis of bovine tuberculosis.

DECREASE OF RANGE STOCK. Between 1910 and 1914 the government figures show that the number of live stock in the eleven range states of the West decreased thirteen per cent. The opening up of range territory for farm homesteads is responsible for this reduction. Every year sees more ranges pre-empted by homesteaders.

THE AGRICULTURAL COLLEGE AN IMPORTANT STEPPING STONE TO THE VETERINARY SCHOOL

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The writer believes the following statement to be true, in the main, viz., that no system of agriculture can reach the maximum of success which does not include intelligent diversification and rotation of farm crops; that no system of diversification can succeed without the inclusion of suitable livestock; and that the farmer is not likely to make the most out of his livestock without the aid of the broadly-educated and intelligent veterinarian.

The greater increase and development of the country's livestock industry have created the demand for greater assistance from, and call for a more extended field of information on the part of, the veterinarian, more especially the country practitioner, whose clientele is made up largely of the agricultural class, or those specially engaged in the breeding and raising of the different varieties of farm animals.

That which seems much to be desired, in the opinion of the writer, at least, is a stronger bond of sympathy and co-operation between the farmer and the veterinarian, not merely a cold business connection, but a sense of mutual helpfulness, which does not always appear to exist at the present time. In fact we are aware of instances in which the services of the veterinarian are sought merely as a last resort in cases of extreme emergency; and where the only interest the veterinarian seems to take in the farmer, is the collection of his fee. So long as this lack of mutual interest on the part of the two classes of individuals obtains, the profession is not going to come into its own as it should, nor be capable of as much beneficial influence as it might, if there existed a greater amount of confidence and friendship on the part of the client, and a little less of the commercial, and somewhat more of the sympathetic and co-operative spirit shown by the veterinarian, toward his client, concerning the welfare of his livestock in general.

There is an old saying in the profession, viz., that it is often much more difficult to treat the owner than it is to treat the animal, and that if one can successfully manage the former, the latter is generally easy. And we believe that, in many cases, this may be

true. The point, therefore, is, how best to treat the owner so as to gain his confidence and make him feel that the veterinarian is one of his best and most valuable friends, instead of a mere individual whom the farmer often tries to do without just as long as he can, and if he has to employ his services at all, is glad when the time comes for him to get off the premises.

The writer does not presume to say that the condition alluded to is universal, but it does exist, and may be more general throughout the country than is commonly suspected.

In our opinion, which we give for what it may be worth, the solution of this problem will depend largely upon the possession of wider information of an alleged character to veterinary science, on the part of the veterinarian. Or, in other words, a more extended knowledge of the subject of hygiene, in its wider sense, as applied to the livestock of the farm.

The objection may here be raised, as it was by the medical profession in years gone by, viz., that to instruct people in the science of preserving health and preventing disease, would be ruinous to the profession. But do we find any fewer physicians today, or their having their fees reduced? Rather do we not find a stronger bond of union, and greater confidence established, between the family and the physician, who is not only the doctor, but the adviser in matters of family hygiene?

And so we believe that a similar condition might be brought about, to a larger degree than at present, between the veterinarian and the farmer and his animal family, and to the greater benefit of both parties concerned.

True, the subject of zootechnics appears on the curricula of our veterinary schools, but it is a question, we think, whether the ordinary student entering a veterinary college realizes the full import of the subjects classed under this head, and is more inclined to view them as "padding," and of little service to him in after life as a practitioner. Or, in other words, the student's idea of the main requirements of a veterinary course is not to study the principles of feeding, for example; nor the judging of livestock; nor yet the various breeds of animals, with which he may be called upon to deal in practice; but merely the commoner forms of animal disease, and the sources, actions and doses of the "pills, potions and powders," so to speak, usually employed in their relief.

Of course it is not the privilege of every prospective veterinary

student to be able to take a course in agriculture at a state agricultural college. But to those who may be so privileged, we would certainly commend it as being one of the most valuable stepping-stones to the veterinary college, and, afterwards, to a more successful career in practice, particularly in the rural districts, as, after all, the country practitioners constitute the bulk of the profession.

Among the subjects taught in our agricultural colleges which might be considered as allied to that of the veterinary science, and which are likely to receive greater attention there than in the veterinary school, the following may be mentioned: Zoology; economic botany; study of the breeds, and the breeding and judging of farm livestock; the chemistry of feeds, and the principles of economic feeding; topics connected with dairying, etc., and the veterinary course which is included in that of agriculture in most, if not all, of our agricultural colleges.

We repeat, that at least some of the subjects mentioned do appear on the curricula of the veterinary schools, but we are inclined to the opinion that the teaching of them must, necessarily, be more thorough, and the facilities and equipment more complete, in the agricultural, than in the veterinary, college.

There can be little question, we think, of greater value, to the farmer and stockowner, of the veterinary graduate who, in addition to his purely professional training, is possessed of a more or less accurate and practical knowledge of other branches which are so closely associated with the well being of the livestock department of the farmer's business. Consequently, and in order to accomplish greater things for the individual, and for the profession generally, and owing to the constantly improving and developing livestock conditions of the country, the veterinarian should not only be a well-trained practitioner, by which we mean a good diagnostician and a therapist, and a more or less expert surgeon, but, in addition, should be an intelligent *adviser* in other, but associated directions. However, to be able to meet the latter requirements successfully, he must have a reasonably-accurate grasp of the more important of the subjects which we have been pleased to term, allied.

The successful treatment of a case of acute indigestion may impress the owner with the ability of the practitioner in that particular direction; but he is likely to be more impressed, if, in addition, the veterinarian is able to give him an accurate and intelligent ex-

planation of the true causes involved, and, incidentally, put him right on the subject of the rational and intelligent feeding of his animals.

Again, the practitioner may successfully inoculate a herd of hogs for the farmer, and so impress his ability as a successful inoculator of hogs, against cholera, which many laymen, also, seem to be. But he is going to make a much more decided impression upon the farmer if he knows, and is willing to take the trouble to explain to the owner something about the different media through which infection of cholera may be carried, and the most effective and practical means by which to sanitize his premises.

The intelligent and economic feeding of farm animals is not generally looked upon by the farmer as a part of the information possessed by the veterinarian; and yet it ought to be, and to some extent is, a part of his education, and a valuable aid in gaining the confidence of the owner of livestock. In other words, the veterinarian has got to know more concerning the livestock problems of the farmer than the mere curing of individual cases of the commoner diseases and injuries.

When that time arrives, and advancing conditions are already hastening it on, there is going to be a most gratifying change in the attitude of the farmer and stockowner toward the veterinary profession generally. The practitioner will not, then, be looked upon merely as an emergency man, but one of the most valuable friends, associates and advisers the farmer can possibly possess in his business.

There is a piece of advice frequently given to young men just starting out in life, and which may be applicable here, viz., "Always show a willingness to do more than you are asked, or required to do," which is worth bearing in mind, as it is sure to pay in the end. To be able to do this successfully, however, the information possessed by the veterinarian must be increased along the lines which we have attempted to suggest; and we believe we are reasonably correct when we say, that the source from which to obtain this broader education, or rather the pre-veterinary college part of it, is the course of study offered to students of agriculture by our state agricultural colleges throughout the country.

CLINICAL AND CASE REPORTS

“Knowledge is born in laboratories and in the experience of the thoughtful. It develops form in the journals and ‘when dead it is decently buried in books’.”

TETANUS DURING LACTATION IN A MARE

E. V. VELD, D.V.M., Harvey, Ill.

On May 11th, 1916, I received a call to Homewood, Ill., and on reaching there was shown a five-year-old black pure bred Percheron mare which was nursing a foal about six weeks old. It did not require a close examination to determine that the mare had tetanus, as her movements indicated general spasms of the muscles of the trunk as well as pronounced trismus. Since the previous day, the owner stated, she had only partaken of fluid nourishment. Examination revealed a neglected suppurating contusion of the frog of the right hind foot, which the mare was said to have contracted about ten days previously. She was not lame. Three thousand units of tetanus antitoxin were administered, the foot was trimmed, antiseptically dressed, thin oatmeal gruel prescribed as nourishment, and the mare put in slings.

The owner now propounded a knotty question, which I found difficult to answer. Will the foal, if allowed to suckle the mare, contract the disease from the milk, or will the milk be in any way harmful to him? He went on to state that the foal, a pure bred one, was of uncommon value, and he would prefer to wean and hand-raise him rather than take any chance. In discussing this phase of the question, I told him that if the foal were removed from the mare she would fret so that it would diminish any chances she might have of recovering. To help solve the problem, Dr. Joseph Hughes was called in consultation, and the decision was reached that the colt should remain with the mare, there being no possibility in his judgment, of the foal contracting tetanus from the mare's milk, and that in all probability the toxins in the milk would be neutralized and rendered harmless by the hydrochloric acid in the stomach of the foal. In about twelve days the mare commenced to take solid nourishment, and in four weeks had completely recovered. During the attack she gave an abundance of milk, of which the foal partook without any injurious effects being observed.

That the toxins of various infectious diseases are eliminated with the mammary secretion when the gland is active is a well-known fact, and that these frequently prove fatal to suckling animals is also well known.

While the case recorded does not definitely set at rest the question as to whether the milk of animals affected with tetanus is innocuous to sucklings, still it may act as a more or less valuable contribution to the literature of tetanus, for the reason that in this particular instance the attack was a decidedly severe one.

—*Chicago Veterinary College Quarterly Bulletin.*

LUMBAR ABSCESS

J. F. ROUB, D.V.M., Monroe, Wisconsin.

The patient was a dark, bay colt of the heavy draft breed, two years old, weighing about twelve hundred pounds when in good flesh. The owner lived eighteen miles from town and like a good many others did not care to go to the expense of calling a veterinarian to see the animal, but informed me that the colt was getting thin and had been losing flesh for the last two months. At the owner's request I prepared a tonic powder for the colt. This was the tenth of March.

I heard nothing more of the case until the fifth of May, when the owner called at my office and reported that the colt was becoming more and more emaciated every day, yet the appetite was fairly good; the colt staggered when walking and appeared to be weak across the loins, which gave the owner the impression that the colt was suffering from kidney trouble. The information that I could get from the owner was not sufficient to enable me to diagnose the case, so he concluded to have me call and see the colt.

On the following day I went to the farm and found the colt a mere skeleton. Careful examination revealed no diagnostic symptoms, the pulse being normal and the temperature 102 degrees F. I came to the conclusion that I had some constitutional trouble to contend with, but decided to make a rectal examination before leaving. By manipulation I discovered what I thought to be two distinct tumors just in front of the right anterior iliac spine. By using my left hand in the rectum and my right externally I was

able to make out their form quite distinctly. They were heart shaped and placed one above the other, the superior one being the largest and its walls seemingly very thick and hard. At this point I informed the owner where the trouble was and that an operation would be necessary, but was doubtful as to the outcome, owing to the colt's poor physical condition.

Not considering it wise to cast the colt owing to its weakened condition, I proceeded to operate in the standing position. Having clipped off the hair and disinfected the field and with the left hand in the rectum as a guide, I made an incision through the skin and passed a trocar into the abscess, evacuating two quarts of thin, creamy, fetid pus. The second abscess was tapped in a like manner and contained about a quart of the same kind of pus. I next made an incision from the lowest point of tapping upwards about four inches, thus connecting the openings. This gave me ample room to explore the cavities, which proved to be multilocular. I then washed the cavities out with a three percent solution of carbolic acid and gave instructions to inject tincture of iodine once daily.

I had no report from the case until July 8th, when the owner called at my office to inform me that the colt was gaining in flesh and doing nicely with the exception that a small fistulous opening existed at the lower part of the incision. At the request of the owner I made a second visit and after making a rectal examination I found the walls of the abscess much diminished in size. I cast the colt and made a free incision from the fistulous opening downward and cleansed the parts thoroughly, leaving instructions as before to inject iodine once daily. The colt made a rapid and uneventful recovery.

—*Chicago Veterinary College Quarterly Bulletin.*

PURULENT MYO-PERICARDITIS

CLARENCE E. MOCK, D.V.M., Ryegate, Mont.

On the morning of April 9th, I examined a red Durham cow on a farm near Ryegate. The animal was 7 years of age, well advanced in pregnancy and in good condition. The owner said the cow had been noticed to absent herself from the herd and seemingly to try to hide. Her appetite was good.

Upon examination the temperature was found to be normal and the abdominal organs seemed to be functioning normally. There was an accelerated weak heart action and the cow carried her neck in an odd position, with nose extended and chin nearly on the ground. At that time no definite diagnosis was made as it was thought the body changes might be incident to the pregnancy.

The cow was examined again May 5th, about one week after she had given birth to a live calf. The cow was down, unable to rise, grunted a little and when placed on her side the condition seemed to be aggravated. An extensive edematous swelling was noticeable over the brisket region. The temperature was normal, respiration 36 per minute and pulse imperceptible. No cardiac sounds were audible over the heart region, no jugular pulse was visible, but the visible mucous membranes showed venous congestion. There was an enlarged area of dullness over the cardiac region on percussion. Peristalsis was normal and the appetite fair.

A diagnosis of pericarditis and unfavorable prognosis was made. The cow died May 9th and autopsy was held.

Upon removing the skin, an extensive serous infiltration of the areolar tissue was found over the brisket region, the infiltration extending well up on the neck and on both arms. The abdominal cavity contained a large quantity of straw colored fluid. The lungs were extensively adhered to the pericardial sac and the adhesions were so firm that they had to be cut with a knife. The pericardial sac was greatly enlarged, its walls being several times their normal thickness. The sac contained fully three gallons of purulent fluid but no foreign body could be found.

So changed was the heart in appearance that the attendants would not believe it was the heart until the large vessels were traced into it. The organ had atrophied to fully one-third its natural size and had much of the appearance of a human hand which has been submerged in water for some time. The wall was fibrous, and one and one-half centimeters thick over the lower three-fourths of the organ.

The apex of the heart had grown firmly to the pericardial sac over a space of about six to eight centimeters in diameter. From microscopical appearance one might believe this interesting condition was not caused by the inflammation but had always existed in this particular animal.

The reticulum contained several foreign bodies such as nails and staples but careful examination failed to disclose any wounds or cicatrices on the reticular wall. All organs other than the ones mentioned were normal.

A diagnosis of myopericarditis was made but it is difficult to account for the excellent condition of the cow at time of death, the continuance of appetite, digestion and circulation up to that time, and the absence of an elevation of temperature.—*Kansas City Veterinary College Quarterly.*

PYEMIC MENINGITIS AND PNEUMONIA FROM CASTRATION AND DOCKING IN LAMBS

D. H. UDALL, Ithaca, N. Y.

The flock contained about 20 lambs from four to six weeks of age. About two weeks before trouble was noticed the males were castrated, and the females docked. Before turning to pasture one was taken sick, and shortly afterwards four others followed in a pasture orchard near the house. It was rather rainy and cold when the lambs first went to pasture, but they were put in the barn nights. One had already died. The owner stated that about fifteen years previous his lambs had been affected in a similar manner.

Symptoms. The mildest cases showed symptoms of paralysis of one or more extremities (monoplegia). One carried the front legs stiffly, below the fetlocks they appeared to dangle. Another knuckled slightly at the knees. A third was affected behind, walking on the ends of the claws (contraction of the extensors of the toe?) Two of the patients were in bad condition; both were males that had been sick about three days. One was down and unable to rise; condition good. Pulse, 180; respiration, 64; temperature, 104.4. Respirations very irregular; slight brownish muco-purulent nasal discharge; vesicular murmur increased. Could stand when placed on its feet, but general paralysis was well marked.

Autopsy. Slight suppuration of the scrotum and spermatic cord; both lungs affected with bronchopneumonia; brain appeared to be slightly congested.

The second of the two severe cases presented striking nervous symptoms. He lay flat on the side unable to rise. When disturbed the entire body would begin to tremble; this was immediately followed by extension of the head, curving backward of the neck (opisthotonus), sometimes the head would be drawn to the right or left, at the same time the back and legs stiffened (general tetanic contractions). The eyes were very prominent, and were drawn so that the sclera alone appeared. After a few minutes the nervous symptoms would entirely recede, but when the lamb was touched they returned again.

Thinking that the second lamb might also have pneumonia, and that "pneumonia of the new-born" might be revealed as the cause of trouble in all the lambs, this one was also chloroformed and posted, but no pneumonia was present. Like the first, the brain appeared congested. An examination of histologic sections made in the department of pathology revealed a purulent inflammation on the meninges of the brain with many polymorphs in the arachnoid tissue.

Before the laboratory report settled positively the true character of the disease numerous interesting opinions were advanced, each reflecting the holders training, experience, or reading. A bacteriologist was inclined to believe that blood infection explained the symptoms. One or two practicing veterinarians naturally took refuge in our universal asylum for ignorance and called it "forage poisoning". The extent to which this once useful term has been prostituted may be realized when some of our own students could not be convinced that it was not the proper diagnosis. Others, of course, associated the affection with the cold wet rains of spring.

Similar symptoms from infection are not infrequent in ruminants. Stiffness of the hind limbs, and meningo-encephalitis, are more or less frequent sequelae to purulent infections of the uterus in cows.

ABSTRACTS FROM RECENT LITERATURE

DOUBLE GALL BLADDER IN A SHEEP. Philip Bruce, B.Sc. *Journ. Comp. Pathology and Therapeutics*. The specimen was removed from the liver of a sheep, and consisted of two filled gall bladders with their ducts. They were of equal size and loosely attached to each other. Each had its own duct, which in each case was not more than one inch long, that from the larger vesicle received one or more hepatic ducts and one common duct was formed to connect with the duodenum. Complete duplication is rare and the origin of such a malformation must, of course, be sought in a bifidity of the primitive bud from which the gall bladder arises.

LIAUTARD.

HISTOLOGICAL EXAMINATION OF PIGMENTED FAT IN HOGS. Dr. Olt. *Zeitschrift für Fleisch- und Milchhygiene*, Vol. 26, pp. 97-100, 1916. — In the fatty tissue of the abdominal wall of the hog, pigmentation is occasionally seen in the form of a slate gray dust and as finely branched twigs against a white background. This condition was described in 1878 by Saake (*Arch. f. wissensch. u. prakt. Tierheilk.* Vol. 4, 1878, p. 226) and lately by de Jong (*Réc. de méd. vét.* 15, 2, 1896).

Dr. Olt examined specimens from a sample of smoked bacon from America; two slaughtered sows, and from an 8 months old wild sow that had not yet farrowed.

The pigment was not due to hemorrhages. It was localized largely in the mammary gland tissue and in its distribution the pigment followed the milk ducts. In these particular cases the glands were not active or had never been active. In the smoked bacon from America, the glandular distribution was noticeable.

The pigment cells pass some of the pigment into the mammary lymph vessels where the pigment is destroyed.

The above described slate gray discoloration of the fatty tissue occurs rarely. From the meat inspection standpoint, such discolored fat is to be regarded as of inferior value. The losses need be but slight, however, if in removing the fat, it be remembered that the discoloration is localized about the mammary glands.

(For pigmentation of fat due to hemorrhage, see Ostertag's *Handbuch der Fleischbeschau*, Ed. 6. p. 371 and Edelmann, Mohler and Eichhorn's *Meat Hygiene*, Ed. 3, p. 233.)

BERG.

NOTES ON CASES—Arthur New, M.R.C.V.S. *Veterinary Record*. PECULIAR INJURY TO A BULL.—He was reported as having the penis injured and being unable to serve a cow. With the animal cast and secured, the penis was pulled out with tape attached to it and there was found, about two inches from the end of the organ, a quantity of matted hairs wound tightly around the penis and causing considerable irritation and some ulceration. The hair was removed, the wound dressed antiseptically and recovery was speedy.

CRAMP OF FEMORAL MUSCLE.—Chestnut mare was taken suddenly lame in off hind leg. She dragged the limb and stood with difficulty when the foot was placed in its proper position. There was no displacement of the patella nor indication of any inflammation. The femoral muscles were tense and rigid. She was put in slings and stimulating liniment was applied. In two hours recovery was perfect.

RUPTURE OF AURICLE IN A MARE.—A well bred light hack had fallen in the street. She had been working, ate her dinner, and after a while suddenly stopped, staggered and fell after having been drenched with some hot ale and gin. As another similar dose was about to be administered she died with a large quantity of blood running from both nostrils. At the post-mortem the pericardial sac was found full of blood and a star shaped rupture existed in the left auricle.

LIAUTARD.

PERFORATION OF THE ABDOMINAL WALL WITH PROLAPSE OF THE INTESTINE. P. Wittmann. *Münchener Tierärztliche Wochenschrift*, Vol. 66, pp. 589-590, 1915.—A stallion ran against a broken shaft and injured the scrotum, the medial surface of the thigh, and in the umbilical region, he sustained a puncture of the abdominal wall 5 cm. long. A loop of the small intestine had been extruded, and was clamped, like a bent thumb, in the opening. Upon my arrival I found that the horse had been driven three-fourths of an hour after the injuries were sustained; he was excited and sweating in his stall. For the purposes of operation the horse was laid on his back. After careful disinfection the attempt to replace the intestine failed. On account of an incorrect history of the case, I had brought no anesthetic with me and could obtain none; under the circumstances the movements of the horse, and especially the straining of the abdominal muscles were very

pronounced. A second attempt to replace the extruded intestine failed, although the wound was enlarged. The failure was due to the extrusion of a 50 cm. long loop of the intestine. A second enlargement of the wound brought about the desired replacement after three-fourths of an hour's work. Strong sutures were used to close the wound and bring the musculature together. The other injuries were then treated; they were not serious. Prophylactic treatment against tetanus was administered the next day. The horse received only small amounts of bran mash and was suspended for eight days.

Contrary to expectations, the horse made a recovery. I had only the owner to assist me. The principles of antisepsis could not be followed because the horse, in his struggles, filled the air with particles of straw, etc., likewise the field of operation. There was neither fever nor pus and after four weeks the horse was put to work.

BERG.

A CASE OF STRICTURE OF THE ESOPHAGUS IN A COW. J. Bouwman. *Veterinary News*.—She had never shown any symptoms of illness before, but for five days she ejected her food a few minutes after eating it. Now and then there was tympanitis. Her appetite was good. The symptoms manifested were as follows: No abnormal sound of the gullet by auscultation. After swallowing some food, nothing was observed for a few minutes, then she arched her back, voided some urine and ejected the food. This was quite moist. While ejecting she had no anxious expression. For five minutes she refused any more food, but then her appetite returned and the same disturbance took place. Diagnosis of dilatation or stricture of the esophagus was made and the animal destroyed. In the thoracic portion of the esophagus there was a dilatation, of the size of two fists. The bulging was in the wall of the esophagus; the muscles and outside wall were intact. On palpation, there was found a stricture in the inside of the esophagus. The bulging contained pus.

LIAUTARD.

INFLAMMATION OF THE SPLEEN IN A COW. P. Wittmann. *Münchener Tierärztliche Wochenschrift*, Vol. 66, p. 591, 1915. A cow which had strayed from the pasture on to a railroad platform, shied at a passing locomotive and jumped off the platform. Several hours later the owner of the animal noticed that she was off feed, moved about with difficulty and was depressed. When I

arrived I found the rectal temperature to be 37.5 degrees, heart beating very strongly and general debility. Ears and skin felt cold. Visible mucous membranes were pale. I diagnosed the case as one of internal injury, and as there was no improvement by the next day, the cow was slaughtered.

On opening the abdominal cavity, 6-8 liters of partly fluid and partly clotted blood were found. The spleen was enlarged to 2 or 3 times its natural size, but no injury could be found. On incising the spleen, the lymph follicles were found thickened, as large as peas. The spleen pulp was grey, but not softened. The other organs showed no pathological conditions. The bacillus of anthrax could not be detected in the blood. Probably the inflammation of the spleen was caused by a concussion sustained while the animal was alive.

BERG.

PARTURITION CASES WITH DECOMPOSITION OF THE FETUS. J. Bouwman. *Veterinary News*.—Records of two cases in mares which were taken ill some time before the epoch for parturition. One of them was delivered of a dead decomposed fetus, the other had two foals, one of which was dead and the other alive. Both mares were treated with injections of common salt water in the uterus, which were made every three hours. Recovery took place without further trouble.

The author records these cases to show that the prognosis when decomposition is present, is not always unfavorable and that injections of common salt solution is very effective on such occasions.

LIAUTARD.

THE HOG CHOLERA PROBLEM, WITH SPECIAL REFERENCE TO SWINE TYPHOID (Ferkeltyphus). R. Standfuss. *Zeitschrift für Infektionskrankheiten, etc. der Haustiere*, Vol. 16. pp. 459-469, 1915. According to several investigators, there is a widespread disease of hogs in Germany which Pfeiler has named swine typhoid (Ferkeltyphus). The bacillus causing it can be sharply characterized biochemically and serologically. Its cultural characteristics are so different from those of the paratyphoid group that it cannot belong to this group.

The swine typhoid bacillus is very similar to the typhoid bacillus in its cultural characteristics. This justifies the term swine typhoid. Different strains of the swine typhoid bacillus are agglutinated by the same serum, showing that they belong to the same group, but they are not agglutinated by paratyphoid serum, or only at very low dilutions.

When strains of bacteria of different origins show such identities in their behavior, an epidemiological fact is established which must not be overlooked. It shows that in all those cases from which strains were obtained, the etiology was the same. It consisted of a bacillus which is as different from the paratyphoid bacilli as the typhoid bacillus is. The swine typhoid bacillus is more sharply differentiated from the colon-typhoid group, especially the paratyphoid bacilli, than for example, the *Bacillus enteritidis* Gaertner.

Clinically, swine typhoid may be differentiated from hog cholera, although statements have been made to the contrary. The differential diagnosis may be based on the general chronic course of the disease. If, in an establishment, the young swine become affected, year in and year out, with out affecting the older animals, hog cholera may be excluded with certainty. Practitioners know that it is the severe septicemic form of hog cholera which takes so heavy a toll, and the chronic form of hog cholera is the rarer form of the disease.

The bacteriological diagnosis can be made more rapidly and with greater certainty than the diagnosis of swine erysipelas, insofar as the cultural tests render a decision in 12 hours.

Just why, in some cases of hog cholera, there are septicemic processes, while in others there are diphtheritic alterations, has not by any means been settled. But so much is certain, that the filterable virus alone can cause acute septicemia or diphtheritic alterations. Likewise, it is not yet determined whether there is a separate disease caused by paratyphoid bacilli (*suipestifer*). In the absence of more definite information it is not advisable to attempt to distinguish between hog cholera, paratyphoid or parapest. Especially because in practice it is not possible to differentiate between virus and mixed infections.

Until further investigations indicate otherwise, it is better to speak only of hog cholera without attempting to give special names to the secondary infections. Swine typhoid should be separated from hog cholera.

The above results are of great practical importance. As a disease of hogs, swine typhoid is second only to hog cholera, from which it may be distinguished by its lesser infectiousness.

The failure to obtain results in the treatment or eradication of hog cholera is undoubtedly due to the failure to distinguish between swine typhoid and the secondary paratyphoid infections.

(See following abstract.)

BERG.

OBSERVATIONS ON THE HOG CHOLERA PROBLEM. II. ON SWINE TYPHOID. E. Joest. *Zeitschrift für Infektionskrankheiten, etc., der Haustiere*, Vol. 16, pp. 470-482, 1915.—In the preceding paper, Standfuss has considered the relations of the swine typhoid bacillus to the typhoid bacillus (*B. typhosus*, Eberth-Gaffky) and to the paratyphoid *B. bacillus*. In order to properly understand these relations it is necessary to consider the swine typhoid bacillus in its relations to the entire colon typhoid group.

If all of the bacteria of the colon typhoid group are arranged in a series according to their biochemical behavior, *B. typhosus* is at one end, *B. coli* is at the other, and midway between the two are the paratyphoid *B. bacillus* and the *Bacillus enteritidis* Gaertner.

Bacteriological research during the past ten years has brought forth many members of the colon typhoid group from human and from veterinary pathology. These new members resemble the end members of the series in some respects, in others they resemble the middle member, the paratyphoid *B. bacillus*. In this way an almost continuous chain has been formed between *B. typhosus* at one end of the series and *B. coli* at the other.

The individual members of the group owe their relationship to one another to the fact that although they have certain biological properties in common, they also have certain differences. In those diseases caused by a particular member of the colon typhoid group, the human paratyphoid *B. bacillus* for example, atypical strains of the bacillus are found occasionally. The atypical strain differs from the atypical in a few reactions and this tends to place the atypical strain of *Bacillus paratyphosus B.* near another closely related typical member of the group. Altered living conditions or continued culture in artificial media may so alter a culture of a typical strain that in some of its reactions it resembles a closely allied member of the group. The number of varieties in the colon typhoid group has become so great that the limits between the members are no longer sharply defined.

From the systematic point of view, the difficulties are increased when varieties of an individual member of the group, the human *Bacillus paratyphosus B.* for example, produces the same clinical and pathological-anatomical picture as the original typical *B. paratyphosus B.*

If from this general point of view, the swine typhoid bacillus be considered, it is at once apparent that it is one of the many

transition forms in the colon typhoid group and that it is closest to the *Bacillus paratyphosus B*.

The history of the swine typhoid bacillus is an example which shows the correctness of the view that the number of members of the colon typhoid group increases as the methods of differentiation become more numerous and more refined.

In 1903 I described certain atypical strains of *Bacillus paratyphosus B*. (*Bac. suipestifer*), long before any one thought of swine typhoid bacilli. Before the biochemical differentiation had reached its present development, the bacillus corresponding to the swine typhoid bacillus was regarded merely as one of the many sports or varieties of the *Bac. suipestifer*. The new member was added to the colon typhoid group through the use of more recent methods of differentiation.

A sharp biochemical differentiation between the swine typhoid bacillus and other related members of the colon typhoid group cannot be made, and hence, it cannot be regarded as an individual variety of bacillus.

Before swine typhoid can be regarded as a distinct disease similar to typhoid, it is necessary to show that in its agglutinating properties, the swine typhoid bacillus of Standfuss is related to the *B. typhosus* of Eberth-Gaffky. According to Glaesser, Pfeiler and Kohlstock, there is no serologic relation between the two. The agglutination tests show that the swine typhoid bacillus is no closer to the *B. typhosus* than it is to *B. paratyphosus B* (*suipestifer*).

For hogs it has been shown that intestinal necroses and swellings are caused by a large number of bacilli of the colon typhoid group; these bacilli belong to that side of the group nearer the *B. typhosus*. The intestinal alterations described by Standfuss are not different from these and the pathological anatomy of swine typhoid is similar to that due to *B. paratyphosus B* (*B. suipestifer*) and the Gaertner bacillus.

BERG.

CHRONIC INDURATIVE NEPHRITIS IN A DOG. J. Bouwman. *Veterinary News*.—Male dog since he belonged to the present owner had been noticed making a large quantity of urine. His appetite was poor and he had great thirst. He was easily tired and much emaciated. The pulse was normal, the urine resembled water, was acid and contained much albumin. No sugar. Nephritis was diagnosed. The dog was destroyed and showed two kidneys much indurated so that the tissue could not be torn with the fingers.

LIAUTARD.

ASSOCIATION MEETINGS

AMERICAN VETERINARY MEDICAL ASSOCIATION

ADDRESS OF WELCOME

WOODBRIDGE N. FERRIS, Governor of Michigan

Mr. President, Members of the American Veterinary Medical Association and Ladies and Gentlemen: I can assure you that as Governor of Michigan, I extend to you a most hearty welcome. I presume an address of welcome has been delivered in behalf of this beautiful city of Detroit. If no such address had been given, twenty-four hours in this beautiful city would convince you that it is worth traveling across the continent in order to see it. I am loyal to Detroit, because Detroit is a part of the great State of Michigan. I can assure you that if you had time to go out from Detroit into the state you would have a still further admiration for Michigan.

I am exceedingly sorry that Doctor Dunphy, my friend, has gotten me into this trouble. The idea of the Governor of Michigan, or of almost any other state daring to address an association of this kind is really one that ought to cause alarm. What do I know about the matters that you have occasion to discuss? In order that you may be fully convinced in advance instead of after I am through, I want to give out just a little bit of my boyhood experience.

Of course, I am aware that you do not devote your attention as practitioners primarily or entirely to horses. When I was first invited, I suppose that my idea of the functions of the veterinarian was quite different from what it is now. Since I arrived in Detroit, Dr. Dunphy has done the best he could to coach me, and let me down as easy as possible, and still let you have a little respect for the Governor of Michigan.

I have changed my view in respect to the work you have to do. Prior to reaching Detroit, I supposed that the major part of your work was with the horse. I know that that is all I have ever called a veterinarian for in my own home, for the horse, and for the dog; and I noticed that the veterinarian did not know very much about the dog. Possibly he did know a little something about the horse, but I am not sure about that, as I finally had to hire a man to shoot the horse.

About fifty-five years ago, I was a rather small lad standing at the side of the road in front of the log house in which I was born. Father had driven the ox team up on the other side of the road, and the team was attached to a long wooden sled. I do not expect you will understand very much of what I will say for the next five minutes. I do not presume that half a dozen of you ever saw one of those long sleds. The sled did not have iron shoes. It had wooden shoes, and, as nearly as I can remember it was four or five or six feet longer than the longest sleds we now have in use, even in Michigan.

Father drove the oxen that were attached to this sled up to the side of the road. They were not oxen, but in this mixed audience I have to speak of them as oxen. To be perfectly frank about the matter, my father never had a pair of oxen during the time that I was on the farm, and I was on the farm until I was twenty-one. I remember their names, which were Buck and Brandy. If father had had anything of the poetical in him, he would have called them Brandy and Buck; then it would have had a meaning, whether you applied it to oxen, or to some other things.

He was about to unyoke them, when I suggested to him—I was a pretty small boy by the way—that he had not detached them from the sled. He said, "Stand back", which, translated into English, meant "Get out of the way. I know what I am about." These oxen were a little peculiar, particularly Buck. Buck was the "nigh" ox. Again I suppose you do not understand what I mean. Brandy was the "off" ox. In unyoking an ox team, or a team akin to an ox team, we always unyoke the "nigh" ox first. I will make this as clear as I can for you—purely a matter of history. Father proceeded to back the oxen as close to the sled as he could, not having detached the sled from the yoke. This "nigh" ox had the peculiarity when you drew the bow, of backing up suddenly in order to gain his freedom. An ox that was a gentleman when you took the bow out would pass forward and out from under the yoke; and in that way the man holding the yoke would not be in danger of having his hands skinned by the horns of the ox; but, this ox had this trait of always backing up. When father took the bow out from the yoke, the ox plunged suddenly backwards and landed on the sled. He had arranged the sled in such a position that if he went back very far, he would

be loaded on the sled, and he succeeded. There the ox was, so to speak sitting on his haunches; his fore legs out as if they were his hands; bellowing the best he could, and my father making the remark, "Now, there, take that, damn you!" In Michigan that language is understood, especially in Democratic audiences. Then he proceeded to unyoke the "off" ox, who was really a gentlemen. After that I remember that whenever he unyoked that team the "nigh" ox glanced to the left, and then to the right, and walked straight forward. In other words, he was "cured".

I am just dropping a hint or two here that is fundamental in education. Father taught the ox a lesson, and did it in rather a crude way. I said to him afterwards, "Supposing that this ox had broken his leg, then what?" "Huh," he said, "We would have had some fresh beef." He said, "We shall never have any unless it is through an accident." That was true, too. I am not going to tell you what we had to eat instead of beef, but he was equal to the emergency.

I only give you this incident to help you understand how fairly familiar I am with oxen or with creatures akin to oxen. During all those twenty-one years on the farm, I yoked and unyoked; I plowed; I dragged; and did every kind of work that could be done with an ox team, and at no time was there ever a horse brought on the farm, except that occasionally father would rent a skeleton and have me ride it in plowing out corn. It wasn't a horse, just a skeleton. That is all the knowledge I had of the horse as a boy. I used to hope that the day would come when father would have one horse on the farm, that I might do as other boys did. If I remember correctly, there never was a horse team employed on that farm except in haying time, and that was during the last year or two that I was on the farm.

Since that time, I have owned two horses, one at a time. All of my knowledge of the horse has been worked out through those two. I became very fond of both of them; the last one, as I have told you, had to be shot. The first one I had to let go at almost any price, on account of her peculiarities in insisting on having her own way. But I came to love the horse just the same. I know now I am dropping a side remark that is not very commendable in a man of twentieth century intelligence, but, so far as I am concerned now, to go about the country for my leisurely ride of an hour or two a day, I would rather have a good

horse than the best automobile that is made in the City of Detroit. With the last little brown mare I had, we could mosey along all over Mecosta County; and the most beautiful part of the county really is out from the roads on which the automobile can with some difficulty run. I could go with this horse wherever I pleased, over the roughest kind of roads, comfortably too; see something, get a sniff of the air, and appreciate in some measure the beautiful things that God Almighty had given to us. Whereas, in an automobile, you see nothing, hear nothing, get nothing at this season of the year but hot air. You can always get hot air without buying an automobile and going riding.

I pay this tribute to the horse; and if your work were confined solely to this animal, you need not worry. We have many horses in Michigan, and we are going to have more. There is going to be a reaction by and by, and people who have sense enough to enjoy nature, and sense enough to ride, and sense enough to take a little further view of God's world will insist upon a change by and by, and that change will be a return to the horse. I am longing for that time to come.

I do not pay this tribute to the horse to be odd or eccentric. I wish I had time to go into the story of the development of the horse, and of its usefulness to man, but I have not. I leave that. I have convinced you now that practically I know very little about the horse. Practically I cannot tell you men and women—if there are any women here practicing veterinary science, and I do not know why in thunder they should not, as they practice nearly everything else—but I have a few other things that I think must apply to veterinary men and women as well as to the medical men. I am glad to have had a little closer knowledge of some other fields of human effort.

In 1873—I have told it before in Detroit, so if there are any reporters or any here who have heard me, they won't say, "Well, same old story; the old fellow is getting pretty old, isn't he? getting in his dotage; isn't conscious of repetition"—thank God I shall probably not know when I am in my dotage; but I do know when I have repeated and stated a fact two or three times. I have told medical gatherings in the State of Michigan and elsewhere that in 1873 I was a student at the University of Michigan in the Medical Department. I wasn't there to become a physician. I was there in order to fit myself better for the educational field

that I have occupied all these years, with the exception of the last three and a half years when I have been Governor of Michigan, and even my educational equipment has been needed during that time. How far I have succeeded in doing anything remains for history to tell.

At that time, in six months I received my credits for one year's work in medicine. Had I returned in the fall of 1874—I was there in 1873-4—in six months more I could have received my degree of doctor of medicine. What is my object in telling this? You will see presently.

We had the same lectures the second year that we had the first, without any variation. A considerable number of the students would matriculate for the first year, and go out and teach school all winter, during that six months, get back in time to get their credits, and then in the second year with a senior's notebook, graduate in medicine, having received a six month's training at the University of Michigan. Don't forget, of course, in the second year you had a little dissecting and possibly listened to a few additional lectures. During the first year, however, there was not a single quiz; no roll call, and no record kept.

I am talking of 1873. I know whereof I speak. I attended the lectures, because I was there to see what benefit I could get from the lectures in order that they might be of some value to me as a teacher. That was only in 1873. And when you received your degree, there was no further trouble about practicing medicine. Six months' training. Now, you have four years of at least nine months each. Remember it was only six months then. You have thirty-six months now in the poorest medical college as against a possible twenty-four weeks boiled down. A revolution has occurred.

While I could have furnished academic papers when I matriculated, I was not asked to supply them. I simply paid my fee, answered a few questions as to whether I had studied Latin or not, as to pursuing certain other studies, and was admitted. There were in that same class, men who could not write a decent sentence of English; and men who could not spell the most common words; men who did not have a common school education.

That was in 1873. There has been a revolution since then. Today a boy or girl cannot enter a reputable medical college without a high school education. The tendency is to require at

least one year of college work besides; in other medical schools two years; and in some of our great medical colleges a college training. What has been the result? It has been that in the last ten or fifteen years, the number of medical graduates of the United States has been cut in two. Medical colleges have gone out of existence that never ought to have existed in the first place, and we are having a new era in turning out medical men. We have a sufficient number of medical men now, at least so says the last number of the Journal of the American Medical Association, wherein you will find a detailed report of all these matters.

While I have told this story of the requirements in medical schools many times, what has that to do with you? All the way along these years since 1873, I have met with men who are kicking, kicking, kicking, because we demanded some academic training for a man who should enter the profession of medicine. Kicking, kicking, kicking, because the requirements were becoming stiffer, stiffer, and stiffer all the time. Thank God we have entered this new era where the medical man must have an academic training; whereby he must have the very best possible medical training; the very best possible clinical training in order that he may go out into the world and do something as a medical man.

The same thing has happened to your profession, and I am glad of it. Yes, I venture to say there are men of your profession who are doing this kicking—not in this convention—they don't come into conventions, they don't read the recent literature, they use every available opportunity of finding fault when a new law is passed whereby the standard is raised a little higher. I am glad that you are entering upon a new era. I am glad that you are requiring in your best veterinary colleges that the student shall be at least a high school graduate; furthermore that he shall pursue a four year course; furthermore that in many states he should go before a state examining board and prove that he has a right to practice as a veterinary surgeon.

There may be some doubters or sceptics here. I do not say I am glad of this, because it will lessen the number. Dr. Dunphy tells me that there are not too many veterinary practitioners today. Consequently you have nothing to worry about along that line. But, let me beg of the members of this association,

don't do a thing by word or by hint that will lower the standard of the requirements for training men for your profession.

Gentlemen, you might at first thought say, "That is right; it is better for us," but how much better it is for the animals you practice on. That is where it is. In my thoughts I was thinking of the animals and not of you.

By the way, since I arrived here, I have gotten another idea;—well, I really had this idea—got it coming down on the train—I do not give Dr. Dunphy entire credit for it. I knew I had to say something when I arrived here or try to say something; so I made my friends who were on the train think I was asleep, so that I might have a chance to run over any thought or catch any thought that might be running around loose in my brain. I began to think about your work and the skill that it must require. As I said, I have not had any practical experience in observing you men to any extent. I do not know whether you have some of the characteristics of the ordinary family physician or not. I suspect that you have. I suspect that you cannot be entirely different from the ordinary doctor. You know where the doctor's weakness is. We all have weaknesses. We might as well be perfectly frank about it, all of us. If any of you men don't think so just ask your wives what they think about it. After a man has been in practice for some time—I am talking about the regular physician now—he is likely to go off half-cocked, and say "This is your ailment", writes a little prescription, sends you to the drug store. There is no especial value in very many of your prescriptions, by the way. I was a sceptic when I entered the medical department of the Michigan University and I came out a sceptic, and I have been growing, growing, growing in my scepticism so far as the use of very many drugs is concerned on human beings, horses, cattle or dogs.

I am not abusing you. It is too bad that some young men start off with putting in their cases twenty-five or thirty remedies, thinking they are armed for anything that may happen. Rubbish! Just as well throw it in the river and go on and see your case and prescribe,—in most cases, not all—I am not talking about surgery now. I am not careless in what I have to say, but the tendency of the physician is to go off, as I said, half-cocked, and where he thinks a certain epidemic is prevailing, pronounces it without careful examination.

In examining a human being, except a baby, you can get some testimony from the patient, and the ordinary physician has an advantage over the veterinarian. Very few of the animals you have to deal with can talk back, very few. Some of them can, in a language which you understand, but ordinarily they will not give you a complete account of their condition. Consequently you have to know accurately and scientifically symptomatology, or the behavior of the animal in order to know whether he is well or sick and just what that ailment may be. Consequently if the standard for education and for scientific acumen ought to be high in any profession, it ought to be high in yours and quite as high as in the medical profession. I rank you along with the regular medical profession.

I am aware that years ago they used to say, "Oh, he is just a horse doctor." I have known men to get angry when some allusion of that kind was made. I have seen some comment in the newspapers recently that I did not sympathize with in particular. I could not see any reason why anybody should reply to an innuendo, to a criticism based on the vocation that a man might follow. It matters not what a man's vocation is in any given position. If he is equal to the job, if he is master of the situation, it is nobody's business whether he pulls teeth, cures horses or practices medicine or is in the political game.

After all, my friends, there is a change that ought to come over your profession, similar to that which has come over the medical profession. I can remember the old family doctor who used to come to my father's house. He was a caution, in dress and in his want of cleanliness, and his language. There is nothing personal about this. I do not want anybody to get sensitive at all. Most of you seem to be as well dressed as the Governor. I have been told that I am entirely out of style. I tried to buy a white vest the other day in Lansing and they said to me, "Don't you know that this is a dry town?" I see that some of you understand. In other words some of you men know who must wear white vests. I have not been at any place in Detroit, consequently I cannot speak for Detroit, but honestly, I could not buy a white vest in Lansing. I want you to bear in mind how fashions change. I am not going to try to get one here tomorrow before I go. I told Mrs. Ferris I would wear these out, and bid them an eternal and ever-lasting farewell.

My friends, there were people in that neighborhood, a few of them, who thought that old Dr. Garfield was all the more powerful because of his superabundance of whiskers, his lack of cleanliness, his unfitting clothes and his never-clean boots. We wore boots in those days. I do not know whether any of you fellows ever saw a pair of boots or not. We wore boots. We never wore shoes. That was not a shoe age. It was a boot age, and the boot is much more serviceable than the shoe in some civilized society. I think in some localities we shall come back to the boot after a while. Go into his office, and it was simply a junk shop.

That has all passed and gone now. In even a small community let a regular physician come and not recognize the fact that the people generally, whatever hardship they may be bearing, however humble they may be, or however simple in their dress, like to see their physician who is supposed to be an illustration of some features of sanitation, in good clothes, clean shaven. If he does not wear "bushes"—and I have no objection to that—that is only a question of style; a man who will wear fur in Michigan at this season of the year, well—I am glad you are good natured or else I would be thrown out, I am sure.

Today he drives a good horse; he drives an automobile, he drives a Ford, of course. I do not get anything for this remark, but I ought to be paid for it. I prize the little Ford for other things than simply getting you there. You get Swedish movements thrown in free, when gasoline is 19 cents a gallon I like to get something free. So I have kind words for these institutions that help a man in more ways than one.

I say that the old-time physician that I am describing as belonging to my father's day is gone, dead and gone beyond all possible resurrection. He did his work. Just so with the veterinarian. The time will come when no veterinarian will feel that it is imperative that he shall have a junk shop in connection with his livery stable. I understand that is to be handed to horses, but thunder, the largest part of your work is outside of the consideration of the horse, isn't it? If you are onto your job, if you are really twentieth century veterinarians, your work is immensely bigger than the horse, so it is not absolutely necessary that you should be where you can sleep with the horse and eat with the horse and smell with the horse.

In other words, these remarks that I am making do not apply to you. They apply to the people at home. But what can you do? Why, you can wake them up. Go after these people. Show them wherein they fail to get the confidence of the people and be worthy of any especial consideration. I congratulate you men that you will travel across the continent, that you will come together for several days to discuss the great problems connected with your profession; and I have only thrown in these side hints to show you that you are marching right along fully abreast of all the other professions, and there is not any courtesy that I can think of that they are worthy of that you are not worthy of.

If you will pardon me I want to appeal to you just as I did to the physicians. I think that your field is simply marvellous. The work that you can do in relation to sanitation, in relation to domestic animals, in relation to the different analysis of food products—why, it seems to me that the field that is open before you is magnificent in the extreme. I had a dream once upon a time that I would be a doctor, but my father handled me the way he handled the ox, so I did not become a doctor at the time I had expected to. I am very glad because I would have begun at sixteen. I would have been traveling around the country today with rabbits in my whiskers and probably had fifteen to eighteen children, which, of course would have elicited the sympathy of Roosevelt, and he would have made me popular in that way; but nevertheless my career would have been quite different and then Michigan would have lost immensely.

I have paid you high enough compliments and I have been absolutely sincere in it, because the animal world has for me a sublime attraction. I wrote home this morning, sent a special delivery to Mrs. Ferris telling her that this morning at four o'clock when I came out of the front door my dog Tot was at the door. I had given her a treatment yesterday, a gentle one, just what any one of you veterinarians would have given her if I had called you and paid you five dollars. I saved five dollars, you see, by my knowledge. I wrote home a special letter. "Please, while I am gone, take good care of Tot."

I do not care what you say about the Governor in regard to his relations to animals. If you have got to whip your dog, just excuse me long enough to get out of hearing. I do not say you should not whip the dog; I do not say you should not whip

your boy; I do not say you should not whip your girl. That depends altogether on your knowledge. That depends altogether on your control. If, however, there is no other medicine in sight, rather than let the child go to the devil, or the dog or the horse, I would use the rawhide if necessary.

I hope the newspaper men will get me correctly, because I have never used the rawhide very much. I have never had occasion to whip a dog; I have never had occasion to strike a horse a blow. I go to the other extreme. I will say the man who will strike a horse an unnecessary blow, who will strike a dog an unnecessary blow, who will strike an ox an unnecessary blow, will, when the occasion arises, strike his wife or his mother. If there are unmarried women in my audience, I would ask them to be particular to observe the young man whose attentions they have in relation to their treatment of the horse or dog. You can get at the real essence of the brute.

I expect you men to do something in the future away beyond what you have done in the past in the way of humane treatment of the animal creation. Bless your heart, what is the main thing that you and the doctors have to do? Give dope? No. Cure disease? No. What is the big thing? The greatest thing, the all important thing in this world today is prophylaxis, to prevent disease; how to teach sanitation and the laws of health, whereby both men and animals will be free from disease. That is the first thing, the big thing, the everlasting thing. What can you do in your community in that line?

We have found out that even hogs thrive best in cleanly surroundings. I think the man is in this audience tonight who, when I said to him, "How are you getting along in such a county overcoming hog-cholera?" He said, "First rate." "I suppose you are doing this magnificent work, in overcoming hog-cholera with serum?" "No, no." I said, "How under heavens are you doing the great work of overcoming hog-cholera?" "By teaching the farmer, the owner of the hogs, cleanliness, cleanliness, cleanliness," so that even the hog thrives in cleanly surroundings and it is an injustice to the hog, a slander on the hog to think that by nature he is a filthy animal. He is a cleanly animal, and most animals are cleanly when they have half a chance, even human beings. I add that because it is pathetic. So I beg of you men to go out as teachers.

The regular physicians are giving from time to time free examinations for tuberculosis. Think of it, in ten years by teaching sanitation, by teaching the laws of health, we have reduced it in the United States, that is for the portion of it that is now listed or for which we have statistics, about two-thirds is listed, we have reduced the death rate in ten years, twenty-five per cent. By curing tuberculosis? No, no. By preventing tuberculosis. Likewise in dealing with hogs and cattle and horses, your chief work is in the line of teaching sanitation and incidentally when you teach sanitation with reference to hogs and horses, when farmers actually discover that horses need pure air, that in their home they must have light, that cows must have light and must have air, and must be cared for and must have exercise, exercise, exercise, that the simple laws of health that apply to men apply to animals. Can't you do something to teach the people along that line? There will come a reaction as simple as a, b, c.

The story is told in the slums of London that one day a little child from a very humble home slipped out into the street and was caught by some woman who was conducting a mission. The little child was taken into the mission, face washed, hands washed, hair combed, made as cleanly as possible, and the little child finally strayed back to his home and when the mother, who was unkempt and unclean, saw the little child, she at once proceeded to put herself in order.

I say to you men that we can get from you a reaction in the home; that naturally when farmers and people generally come to understand that hogs and chickens and sheep and horses and all the domestic life must have cleanly surroundings, must have the best sanitation, there will come a reaction in the home and by and by, slowly, people will, at night, sleep with the windows open. I am not referring to this particular spell of weather—and will get the benefit of the simple laws of sanitation.

So I plead with you men, and beg of you men to do something more than wait for a call. Do a little constructive work in your neighborhood, and that will be the easiest way to shut out the quack. All over Michigan we have the quack and kicker, the fellow who ought to be exterminated for the good of the animals of the state in which he resides. It is up to you to do it. When the people become thoroughly convinced that your function is

as important as I have described it, it will have a healthy action.

Lastly, do not forget the human side. It is in your power, dealing with these dumb animals, to shed a genial influence over the boys and girls in the treatment of animals. You have learned already that I am a school master, but I want to say to you that these things are important from the last point I am making tonight, the humane point.

I saw a little boy come out of a certain church in Big Rapids on a dark Sunday morning. I was not in the church, of course, I was coming home, probably from the post office, and met him on the sidewalk. I will be perfectly frank with you because naturally you would say, "How did you happen to be out on this dark morning?" This little fellow had just come from Sunday school and had under his arms two books, evidently books he was going to read during the week. I inferred that. At the point where we met there was a stone walk that went out to a horse block and on that stone walk there stood a toad, attending to his own business. Probably he did not know that it was Sunday; probably he did not know that there was Sunday school that day; and he probably did not know that a boy who had failed to learn kindness to animals would be likely to come that way. The boy stepped out from the walk, out of his way, off the main line of the walk, stepped out and put his heel on the toad and crushed its life out. Remember now, he had just come from Sunday school.

That is nothing against the Sunday school, not at all, but you cannot teach morals, nor you cannot teach religion—I am saying this dogmatically—simply by word of mouth; you have got to do it by example. The boy had got to learn kindness to his dog through the kindness his father renders to his horse, to his mother, to his sister and to animals on the farm. It is the objective kindness, the objective tenderness that must be practiced towards the animal world, and you men are in a better position to teach some things that are humane to the boys and girls of this country than the preachers, than the school teachers, all because you are dealing with animals directly.

Pardon me for this personal appeal. I thank you ever so much for listening to me for fifty minutes. I did not come here with any special message. The only reason I dared talk to you for this hour is that we are all human; we are looking for better times; we are looking for better things in education;

we are looking for a larger degree of kindness towards the animal kingdom.

The present war in Europe strikes terror to the hearts of most men who think at all. They wonder how it is possible that we could have gotten down to the primitive element, the primitive brute instincts, brought them to the surface, to destroy to the bitter end. They wonder whether we shall ever get back to where we can be kind at all, where we can be humane. But it goes clean down along the line as I have described it and I still have faith, and I still have hope that by and by we shall actually come to the conclusion that we are on the right track, and that we are great in proportion as we are humane.

RESPONSE TO ADDRESS OF WELCOME

J. G. RUTHERFORD, Calgary, Canada

Mr. President, Ladies and Gentlemen: I have been connected with the American Veterinary Medical Association for a very considerable number of years. I have been a horse doctor for a great many more. I have listened during that period, and even in years before that, to a very great many addresses of various kinds. I have from time to time regretted, even after the passage of years, the time spent in listening to some of those addresses. During all those years, I have no recollection of ever having listened to so good, so searching, so intelligent, and so comprehensive an address given by a public man to a special audience, with whose aims and objects, manner of life, he himself confessed in his opening sentences, he was altogether unfamiliar. I will look back to the end of my days with very great pleasure and personal gratification to having been present tonight.

We in Canada, always friendly to our great big sister south of the line, have been particularly friendly to the State of Michigan. You know we at one time had proprietary rights in Michigan, and then when these were lost, they were once more resumed, and again Michigan passed from our hands. "It is better to have loved and lost, than never to have loved at all", and we have never lost our love for Michigan. In the State of Michigan, there are many thousands, and tens of thousands of people who were born across the line, and who came over here into Michi-

gan—and because it is a part of my creed, following the Governor's principles, I am not going to tread upon anybody's corns if I can help it, but I am going to suggest that possibly the intelligence which is by common consent yielded to Michigan may be to some slight, infinitesimal extent, due to this infusion of Canadian blood from across the border. We have always known that the people of Michigan were possessed of good, common sense; and that that was one of their main characteristics. We knew that they were comparatively, at least, honest. We knew that they were upright. We knew that they were progressive; and we knew that they were, generally speaking, at any rate, a sober people, a sober-minded people. If anybody in this audience ever had any doubt upon that subject, those doubts have been forever set at rest tonight, because a state possessing a people which has shown the common sense that the people of Michigan have shown in electing to the governorship of this state a man possessed of the mind and the ideas, to say nothing of the oratorical powers of our friend the Governor, needs, like the old wine, no bush. We need make no song about the State of Michigan and its common sense, because to our minds it has been justified fully by the selection of its chief magistrate.

You and I, ladies and gentlemen, on both sides of the international boundary, have listened to a very great many addresses from public men, who honored us by coming to our various conventions. You, as I, have noted, although we did not always remark it publicly, a vast difference in the various addresses presented to us by these public men in different parts of this continent. Some of them were child-like in their simplicity. Others were funny. Some were positively painful. I think I am safe in saying without any unkindness in my heart to the gentlemen who made these speeches, that none of them were in any way to us, as a body, instructive until tonight. We have had a sound, practical sermon from a sane, hard-headed man.

We who have been in the profession for many years know that everything he said tonight was true in regard to our profession, as regards the humility of its origin, and the social disparagement, which is from time to time cast upon it and its progress upward through the years, the decades of progress to which so many of the gentlemen whom I see sitting around me here tonight have contributed in no small degree. The mem-

bers of this association who have had to do with the uplift of the veterinary profession know every word he said was absolutely true. His speech was true and searching, not only in regard to what I have said, but in regard to the actual work of our profession.

His remarks in regard to prophylaxis or prevention of disease, were worthy of note by every young practitioner in this room and out of it; and I want to tell you something as one who for many years practiced in a rural community, that there is no better way to acquire an influence for good under control of public opinion, than to tell these people everything that you possibly can in regard to the cause, as well as the prevention of disease.

A great many veterinarians, particularly of the older school hesitate to tell the farmer what is the reason that his horse, or his cow, or his hog is sick, because they say, "Why, the number of cases that we get will be reduced, and our fees will suffer in proportion." That is the greatest mistake in the world. Keep on educating the owners of the live stock which you are called to see. Show them the errors which they are making from a hygienic point of view, from a dietetic point of view; from a point of view of exercise and work, and you gain the confidence of those men just as soon as they find out that you know what you are talking about, and realize that what you say is true. Once you have the confidence of those men, they come to you with every little ailment, they come to you for advice, and you need not always charge them for it, if it does not cost you anything to give it to them. It is absolutely true, what the governor said, it is part of the duty of the veterinarian in any community, in a city community, as well as in the country. This is more readily seen, and possibly more lasting in the rural community than in the urban community.

Then he grasped what so many people fail to grasp, and that is the fact that the real skillful and conscientious and successful veterinarian has to be a whole lot better man than the medical practitioner. He has to be a better man, because he has to find out from a dumb animal what is the matter with it, and the whole thing is observation. A man must cultivate observation from the time he starts practicing. He has to know what every move a sick animal makes, means. Lameness they say is the language of

pain. So it is; in sickness, there is a language of pain, and I know there are sitting around me tonight a great many men who understand that language, and who by their ability to read that language can make a correct, sound diagnosis. They know what is the matter with the animal, and consequently they can treat it intelligently.

I have often thought and I have often regretted that I did not go into that line of practice myself, when we know the terrible mortality among children that there is all over the world. I have often thought that the best possible man to treat young children, would be the veterinarian, the skillful, sympathetic, observant veterinarian. He has become so accustomed to observe and read the symptoms of dumb animals that in nine cases out of ten, he can make a very much better diagnosis in a child than can the physician who is accustomed to asking the patient a whole lot of questions, using the bed-side material, which, of course, is not so necessary in the case of our patients, and must judge for himself as to whether the patient is telling the truth or fabricating falsehoods as he goes along. The veterinarian, with sympathy and intelligence certainly has the training to treat the young children.

I remember, away up in Manitoba, when I was in practice, there was a young Scandinavian servant girl, and she spoke no English. There were no other Scandinavians in the neighborhood, and her employer had no knowledge of her language at all, and the girl took very ill. They called in the physician, and he came and tried to find out from that poor girl what was wrong with her; but he could not speak to her, and she could not speak to him; and finally he turned around and said to her employer, "There is only one man around here who can tell what is the matter with this girl, and that is Rutherford; you had better send for him."

That was just an illustration of what the Governor was referring to tonight. There is not one layman in a thousand who, in my experience, takes enough thought of the veterinary profession, or of the difficulties which attend veterinary practice, to put his finger on that little point, but he did it.

Then again, he talks about kindness and humanity to dumb animals. You all know he is absolutely right. You all know how much more you can do with an unruly or fractious patient by

treating him kindly than you can by treating him roughly. In our work, as you know, there comes a point where we have either to use force or an anaesthetic. Personally, I generally prefer the latter, but long before that point is reached, those of us who have worked in the profession for many years, know how much can be done by patient and gentle handling of our suffering dumb friends. We also know this: from certain farms the horses come to us for treatment, and the cows with which we deal are kindly and gentle, docile and friendly; you can do almost anything you like with them. The horses from some other farms are savage, ugly tempered, cranky, vicious, bite and kick, and do all sorts of mean things. Why? That is the treatment received at home. You all know that just as well as I do, and the Governor also put his finger on that, and I reiterate that never in my long life have I listened to a better and sounder address than we had tonight from Governor Ferris of Michigan.

I have heard a lot of these public men upon a public platform—you know I was ten years in politics myself,—and I am on to a good many of their curves,—I was wondering what he was going to get at. When he began discussing the professional man, the medical man and the veterinarian, it reminded me of the old story, the scene of which, by the way, was laid in Michigan, the story of the farmer, who one very hot afternoon in August, was driving along a very dusty road on the spring seat of a lumber wagon chewing a straw. He overtook an individual in somewhat rusty black clothing who was trudging along on the dusty grass by the side of the dusty road. He offered him a ride, and the chap climbed upon the spring seat, and they rode along a couple of miles in silence. Finally the farmer said, "Say Mister, what might your business be?" "Oh," said the chap, "Friend, I am a professional man." "Oh," said the farmer. They rode along for another half mile, the farmer keeping a sly glance at the visitor, and he said, "What kind of a professional man be you anyway? You ain't a preacher, or you would have a collar on; you ain't a doctor, or you would have your kit; you aint a lawyer, or you would be talkin; what kind of a professional man be you?" "Why," said the chap, "My friend, I am in politics." "Why," the farmer said, "Politics! That ain't a profession; that's a disease." All I can say is that if they get into that disease, politics, a few such doctors as our friend Governor Ferris, the stigma will be taken out of it in short order.

Now, Ladies and Gentlemen, I do not propose to occupy any more of your time. If I were to talk to you for an hour, I could not say anything more in appreciation than I have said, and there is no use rubbing it into you, for you all know that it is true, and you all know that I have not overdrawn the picture one word. On behalf of this association, I desire to convey to you, sir, our most sincere thanks for your courtesy in coming to visit us to-night, for your kindly words, and above all, for the practical sermon which you were good enough to deliver.

REPORT OF THE SECRETARY

During the past year many matters have come up which deserve mention in the report of the secretary:—

(1) **THE QUESTION OF DUES.** At the 1915 meeting in Oakland, the association voted to increase the annual dues to five dollars. This matter had been proposed at the New York meeting in 1913 and referred to the executive committee. At the 1915 meeting, the executive committee recommended that the proposed amendment be rejected. The association, however, rejected the recommendation of the executive committee and voted the adoption of the amendment to increase the dues to \$5.00. A study of the debate preceding the vote as transcribed by the official stenographer convinced your secretary that it was the understanding of those present and voting that the change in dues would not take place until September, 1916. (See Journal of the A.V.M.A., Vol. 2, p. 287.) This opinion was endorsed at the special meeting of the executive committee held in Chicago, Dec. 3rd, 1915. Acting on this ruling, dues during the past year have been collected at the \$3.00 rate but applicants for admission have been charged \$10.00 instead of \$8.00 and applicants for reinstatement \$11.00 instead of \$9.00.

(2) **FINANCIAL CONDITION OF THE A. V. M. A.** For several years the treasury has been in a somewhat impoverished condition. At the 1913 meeting, the financial conditions were such that in publishing the proceedings of that meeting, it was necessary for the officers of the association to assume responsibility for some \$3000.00. The cancelling of the 1914 meeting, which was to have been held in New Orleans, resulted in temporarily bettering the financial condition of the association by the accumulation in the

treasury of an entire year's dues without the expense of publishing the proceedings of an annual meeting. During the past year, it has been possible to pay bills, although several times, the balance in the treasury has been reduced to almost nothing.

On October 1st, 1915, because of lack of sufficient funds to purchase the American Veterinary Review, the sub-committee on Journal (Drs. Marshall, Eichhorn and Lyman) gave personal notes amounting to \$1500. Only five hundred dollars of this still remains to be paid and this note does not mature until October, 1916.

The financial prospects for the coming year are excellent. The acquisition of a Journal was a good financial move. At the present rate, in less than two years, it will pay for its purchase price of \$2500, through the saving over the former cost of publishing the proceedings in book form. The Journal has doubtless been of enough indirect benefit to already pay for itself. The larger number of applications on file, 421, are largely due to the prestige of publishing a journal. With the annual dues at \$3.00, the association has been able to meet the obligations of financing the Journal and to this has paid \$5112.35, including \$2000 on the purchase price. The coming year, there remains only \$500 to pay on the purchase price. All bills presented up to date have been paid and there yet remains a cash balance of \$1349.06 in the hands of the treasurer. The 1916 dues now payable amount to over \$10,000. In case it is decided to continue the dues at \$3.00, about \$900 of this will either have to be returned to applicants or credited on their 1917 dues.

(3) REORGANIZATION. It is recommended that the association proceed to reorganize without further procrastination. The present by-laws are unsatisfactory for conducting the business of the association.

In order to conform to the requirements of the U. S. Post Office Department, it has been necessary to change the form of application blank. The present method of transacting business causes not only a waste of time but is an undignified procedure for a national organization such as the A.V.M.A.

(4) INCORPORATION. The Oakland meeting accepted the recommendation of the executive committee "that this association be incorporated as the American Veterinary Medical Association." (See Journal of A.V.M.A., Vol. 1, p. 776.) The President arranged with his attorney, without expense to the association, to draw up

tentative articles of incorporation. These were discussed by the President and Secretary. Since the attorney's advice, after several conferences, was not to incorporate until after reorganization, it was deemed for the best interests of the association to hold the matter in abeyance. This decision was concurred in by the chairman of the reorganization committee.

During the year, over 25,000 pieces of first class mail have been sent out by the secretary's office. Your secretary regrets some mistakes which have occurred in his office. With a limited amount of time to devote to the association work, it has been difficult to personally attend to some of the details. I would recommend that a full-time secretary be employed and that a permanent office be established in some centrally located city. The secretary of the American Medical Association recently granted an interview to two of your officers (Dr. Hart and the writer) during which it was suggested that there were certain advantages in establishing the secretary's office in the state in which the association incorporates.

SUMMARY OF SECRETARY'S FINANCIAL REPORT

Am't Rec'd for dues and applications.....\$10,150.40

Am't Rec'd from other sources (see items
below) 3.05

Total Received \$10,153.45

For Debit Acct. see p. 195.

Amt. sent Treasurer, Dr. Schneider.....\$10,137.45

Debit in acct. checks returned (insuffic. funds) 16.00

Total \$10,153.45

MEMBERS		MEMBERS	
Alabama	22	Hawaii	8
Arizona	3	Idaho	15
Arkansas	3	Illinois	121
California	142	Indiana	110
Colorado	33	Iowa	80
Connecticut	31	Kansas	50
Delaware	4	Kentucky	22
District of Columbia.....	40	Louisiana	22
Florida	5	Maine	14
Georgia	11	Maryland	31
Guam	1	Massachusetts	48

MEMBERS		MEMBERS	
Michigan	69	Vermont	12
Minnesota	57	Virginia	28
Mississippi	21	Washington	29
Missouri	66	West Virginia	13
Montana	20	Wisconsin	59
Nebraska	67	Wyoming	7
Nevada	9	CANADA	
New Hampshire	8	Alberta	17
New Jersey	33	British Columbia	14
New Mexico	13	Manitoba	22
New York	145	New Brunswick	1
North Carolina	16	Nova Scotia	4
North Dakota	59	Ontario	26
Ohio	99	Quebec	11
Oklahoma	9	Prince Edward Island	1
Oregon	22	Saskatchewan	16
Pennsylvania	144	OTHER COUNTRIES	
Philippine Islands	18	Australia	1
Porto Rico	1	China	1
Rhode Island	6	England	2
South Carolina	13	France	1
South Dakota	27	Ireland	1
Tennessee	13	South America	1
Texas	35	South Africa	
Utah	9		
Number of members resigned during year	11		
Number of members died during the year	{ Honorary 2		
	{ Active... 13		
Number of members suspended 1915 for non-payment of dues ..	68		
Number of active members (not including H. R. or Honorary) 2051			
Number of honor roll members 1915	46		
Number of Honorary members 1915	28		
Applications on file	421		

Mail has been returned during the year from the following 48 members:

Aicher, Edward H.	Agricultural College, Miss.
Albershardt, A. H.	Indianapolis, Ind.
Baker, Horace M.	Univ. of Sydney, Australia
Basinger, H. P.	Mitchell, S. D.
Braginton, Fred	Indianapolis, Ind.
Braisted, Wm.	New York City
Brown, Arthur C.	San Francisco, Cal...
Burke, James W.	Chicago, Ill.
Caldwell, F. W.	St. Joseph, Mo.
Coover, W. E.	Indianapolis, Ind.

Cumming, David	Port Huron, Mich.
Davis, Wm. L.	Omaha, Nebraska
Drake, Edw. J.	Toledo, Wash.
Embree, Warren J.	Aberdeen, S. D.
Engle, Frank P.	Ft. Worth, Texas
Ferneyhough, James G.	Burkville, Va.
Findlay, Alexander	Camden, N. Y.
Gimper, W. S.	Harrisburg, Pa.
Hamilton, Wm. C.	Chicago, Ill.
Heaton, John B.	Indianapolis, Ind.
Hemneberger, W. B.	Portland, Ore.
Hill, Wm. P.	Ft. Riley, Kansas
Howard, Julian	Stanwood, Wash.
Howard, Ogden J.	Coloma, Mich.
Hudgins, Patrick H.	Fredericksburg, Va.
Hyrley, Paul C.	East St. Louis, Ill.
Johnson, Albert C.	Portland, Ore.
Johnson, August F.	Memphis, Tenn.
Knap, Anton E.	Billings, Mont.
Lang, August R.	Porterville, Cal.
McCarthy, Thos. A.	Chicago, Ill.
McEvers, Albert E.	Chicago, Ill.
MacDonald, R. W.	Flint, Mich.
MacIntosh, R. D.	Toronto, Ont.
Mackie, Clement L.	Towson, Md.
Meade, Albert M.	National Stock Yards, Ill.
Morel, Jules F.	Portland, Ore.
Moyer, B. Franklin.	Philadelphia, Pa.
Munce, Thomas W.	Washington, D. C.
Parrish, R. D.	Omaha, Nebraska
Pearce, Frank H.	Carson, Ia.
Phillips, S. C.	Sheridan, Ind.
Preston, M. J.	Moosomin, Sask.
Prien, Otto L.	Laramie, Wyo.
Ransom, Sherman	Vancouver, B. C.
Springer, U. S.	Grand Rapids, Mich.
Struthers, Chas. E.	Chicago, Ill.
Venzke, Harry E.	Garretson, S. D.

Executive Committee, American Vet. Med. Ass'n,

Gentlemen:

I herewith present the names of the following members for honor roll who, according to the records of the A.V.M.A., have been in continuous membership in good standing for twenty-five years:

Ackerman, E. B., 367 Flushing Ave., Brooklyn, N. Y.
 Brenton, S., 121 W. Alexandria Ave., Detroit, Mich.
 Connaway, J. W., Univ. of Missouri, Columbia, Mo.

Grange, E. A. A., Ontario Vet. College, Toronto, Ontario.
 Hughes, Joseph, 2537 State St., Chicago, Ill.
 Knowles, M. E., Helena, Mont.
 *McNeil, Jas. C., 3349 Webster Ave., Pittsburg, Pa.
 Mayo, N. S., 4753 Ravenswood Ave., Chicago, Ill.
 Meisner, H. A., 1133 Hartford Ave., Baltimore, Md.
 Nelson, S. B., Pullman, Wash.
 Paige, Jas. B., Amherst, Mass.
 Peterson, W. E., 16 Lyman St., Waltham, Mass.
 Reynolds, M. H., Experimental Farm, St. Paul, Minn.
 †Ryan, J. F., 2525 Indiana Ave., Chicago, Ill.
 Sollberger, R. J., 1412 S. 8th St., St. Louis, Mo.
 Turner, J. P., 916 O. St., N. W., Washington, D. C.
 Whitney, Harrison, 20 George St., New Haven, Conn.

(Five of these members were admitted to the association in 1890; the others in 1891.)

*Delinquent (1910)

†Delinquent (1913)

C. M. HARING, Secretary.

NEW MEMBERS ELECTED AT THE DETROIT MEETING ALABAMA

Ayer, Hobart C.	.....	New Decatur
Head, Cage	.....	Wilton
Howle, Thos. Blake	.....	Oxford
King, D. Edwin, Jr.	.....	Mobile
Meador, Daniel J., Jr.	.....	Auburn
Reidy, John B.	.....	Birmingham
Raycroft, W. C.	.....	Mobile
Strickler, Don B.	.....	Birmingham
Venable, Jos.	.....	Cullman
Wilson, Howard C.	.....	16 Yancy St., Montgomery

CALIFORNIA

Beach, J. Raymond	.....	University Farm, Davis
Bonnikson, Harry P.	.....	2226 Parker St., Berkeley
Brooks, C. S.	.....	Hollister
Caldwell, Robert A.	.....	6th and Grayson St., Berkeley
Carr, Wm. R.	.....	816 San Pedro St., Los Angeles
Dardis, Thos. L.	.....	Stockton
Howell, Edgar C.	.....	Bishop
Kerr, Owen W.	.....	Turlock
McKim, H. C.	.....	816 San Pedro St., Los Angeles
McLean, Wm. C.	.....	San Mateo
Mantor, Herbert O.	.....	354 Chestnut Ave., Long Beach
Peterson, Peter T.	.....	610 65th Ave., Oakland
Rebold, George P.	.....	Stockton
Rydberg, August J.	.....	San Rafael

COLORADO

Bryant, John B.....	Trinidad
Carrol, Arthur N.....	Pueblo
Hammond, Wm. L.....	404 Post Office Bldg., Denver
Lamb, Percy	Englewood

CONNECTICUT

Brown, Peter B.....	Meriden
Maxon, Fay Irwin	62 Oakland Terrace, Hartford
Meyers, Chas. H.....	100 Berlin St., Middletown
Sutherland, Arthur W.....	Bristol

DISTRICT OF COLUMBIA

Berg, Wm. N.	B. A. I., Washington
Hall, Maurice C.....	B. A. I., Washington

FLORIDA

DeMilly, John W.	Tallahassee
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GEORGIA

Dinse, Alfred J.	Box 161. Jackson
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IDAHO

Brown, W. W.....	Liberty
Smith, George A.....	Rigby

ILLINOIS

Bailey, Hugh W.....	Orion
Baldwin, Boyd.....	405 South 3rd St., Rockford
Bott, Anthony E.....	East St. Louis
Darby, R. N. G.....	Barrington
Faulhaber, Louis G.....	2840 West North Ave., Chicago
Frost, George P.....	4527 Ravenswood Ave., Chicago
Johnson, Ralph H.....	Woodhull
Kempf, Silas	Roanoke
Kincaid, Albert R.....	Stonington
Leibold, A. A.....	4515 N. Robey St., Chicago
Lucas, Clinton E.....	Olney
McGrath, Elinor.....	3217 Indiana Ave., Chicago
Merriam, Cecil.....	Mt. Pulaski
Potter, Leslie G.	Quincy
Rasmussen, J. C.	Wyanet
Rives, Robert	National Stock Yards
Salter, W. R.....	Stronghurst
Simmers, C. O.....	Tolono
Sisk, David E.....	Mohamet
Swingley, C. W.....	Freeport
Teckenbrock, W. G.	Metropolis
Vanderwarf, Cornelius	Chicago Heights
VanCleave, Walter B.	Chrisman
Velez, Hepolito C.....	4651 Hermitage Ave., Chicago
Walters, Frank A.....	Lemont
Wright, Carlton J.....	Cerro Gordo

INDIANA

Alexander, E. V.....	3309 Park Ave., Indianapolis
Anderson, Jas. E.	Ligonier
Baxter, Jos. M.....	Middlebury
Bowne, Frank	Hazleton
Boyd, Ralph H.....	Avilla
Bray, F. O.....	Arcadia
Carpenter, Ira V.....	North Liberty
Chapin, Chester E.....	Fremont
Cannal, Harvey J.....	Rensselaer
Lynch, John E.....	124 W. 22nd St., Indianapolis
Redman, Jos. F.	Covington
Sharp, Charles E.....	Greenfield
Silberg, Frank W.....	Spencerville
Sleigely, Raymond W.....	La Porte
Whallon, E. A.....	Akron
Whiting, Rex A.....	W. LaFayette

IOWA

Baldwin, Arthur F.	Creston
Ballard, Fred S.....	Sibley
Betts, Roy S.....	Lost Nation
Blossenberger, W. P.....	Williams
Bowker, George W.....	Van Horne
Brill, Jos. A.....	Dow City
Cameron, H. M.	Springville
Carson, George W.....	Lake Mills
Dorweiler, Philip O.	West Bend
Drown, Frederick A.	Kellogg
Foster, Lloyd E.....	Greenfield
Greenwood, Edward S.....	Laurens
Haskins, Albert B.....	Davenport
Jessen, Julius A.....	Shelby
Johnson, Homer.....	Bussey
Johnson, Howard C.	Brighton
Johnson, Philip E.	Dayton
Juhl, Charles E.	Osage
Kippen, N. A.	Independence
Likely, Chas. W.	Ankeny
Mill, Benj. F.....	Denison
Miller, W. J.	Indianola
Moore, Robt. G.....	Dunlap
Nulty, Nathaniel S.	Nevada
Parker, Chas. S.....	Fayette
Rice, Chas. D.	Ames
Ross, Roy G.....	Estherville
Schoenberger, John Guy.....	Winterset
Smith, Wilber C.	Fairfield

Stott, R. O.	Mason City
Teague, B. B.	Bode
Thomsen, John T.	Armstrong
Thomson, Jacob J.	Gladbrook
Van de Woo, H. J., Jr.	Orange City
Van Vranken, Henry S.	Story City
Willey, Louis E.	Ames
Wing, Casper Lee	Van Wert

KANSAS

Boyce, Walter	20 P. O. Bldg., Kansas City
Fleming, Jas.	23 Federal Bldg., Kansas City
Frey, Jesse J.	Manhattan
Ruffner, Fred K.	Beloit
Syders, Roy A.	Moran

KENTUCKY

Austin, J. A.	Fulton
Calldemeier, Edwin	Louisville
Crisler, Lewis H.	Covington
Farley, Edwin P.	Paducah
Himmelberger, Leo R.	Lexington
Huffman, Ludwig R.	Paris
Irvin, Walter J.	Carlisle
Longnecker, Allen O.	Hickman
Mackie, Cyril	(Elmendorf) Lexington
Pedigo, George W.	Glasgow
Tiffin, Chas. H.	Frankfort
Westmoreland, Dewey E.	Owensberg

LOUISIANA

Bushong, Jos. P.	603-604 Roumania Bldg. Baton Rouge
Kindrick, A. D.	Homer
Smith, Ernest I.	Baton Rouge
Wirt, Frederick G.	Napoleonville

MAINE

Baird, Paul R.	Waterville
French, C. B.	Rockland
Henderson, E. P.	Houlton

MARYLAND

Sapp, Chas. F.	Hampstead
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MASSACHUSETTS

Balkam, Ralph W.	53 Whiting St., Springfield
Broderick, Wm. H.	2475 Massachusetts Ave., Cambridge
Cone, Michael J.	Pittsfield
Keene, Chas. A.	25 Beacon St., Fitchburg
McNamara, W. J.	8 Green St., Worcester
Plaskett, Wilfred F.	Clinton
Thayer, Warren L.	598 Pleasant St., Worcester

MICHIGAN

Armour, Henry M.	Chelsea
Armstrong, Robert	641 Field Ave., Detroit
Buck, Samuel H.	Marquette
Carpenter, Howard	Detroit
Clark, Chas. H.	McCords
Cox, William	Mayville
Curl, Chas. M.	Highland Park
Davidson, F. N.	Petoskey
Ducey, John	Freeland
Ducey, M. D.	Merrill
Dunphy, Chas. B.	Mason
Duncan, Francis	Ithaca
Geiger, Milton J.	Croswell
Haynes, Wilfred A.	Jackson
Hicks, Floyd H.	Allegan
Kemp, Donald T.	St. Louis
Mayer, Gustav P.	Elk Rapids
Mendenhall, Maurice	Detroit
Moody, George C.	Mason
Nichols, Abner Z.	Hillsdale City
Perry, Burton A.	Hastings
Schaffer, George R.	Midland
Schubel, Otto W.	Quincy
Smith, Eldon	717 Watson St., Grand Rapids
Sprink, George F.	Parke, Davis & Co., Detroit
Van Brussel, O. H.	Wayland
Wileden, Lewis A.	Lansing

MINNESOTA

Andreassen, S. K.	Barnesville
Berg, Elmer W.	106 Spruce St., Minneapolis
Boucsein, Gustav L.	Spring Valley
Bromaghin, Walter	Belle Plaine
Campbell, John N.	Truman
Cook, Bertram L.	Cannon Falls
Donaldson, Robt. R.	Argyle
Elmes, Jos. H.	Eagle Bend
Erickson, Chas. W.	Marine Mills
Evenson, Harry	Sacred Heart
Havreberg, Arne H.	Olivia
Higbee, M. R.	Alberta Lee
Kernkamp, Howard	829 E. 3rd St., St. Paul
Lees, Arnold F.	Red Wing
McLaughlin, Wm.	Rush City
Metzger, George E.	99 Western Ave., Minneapolis
Olson, Lewis	McIntosh
Rasmussen, Hilmar	Tyler

Titterud, Oscar H.	Preston
Utter, B. A.	Triumph
Utter, G. W.	Sherburn
Weaver, Gilbert S.	Olivia

MISSISSIPPI

Horn, S. J.	Stratton
Knutzen, Virgil H.	Cleveland
Norton, Edwin S.	Greenville

,MISSOURI

Backus, L. S.	Columbia
Carver, Hubert C.	Higginsville
Churchhill, Thos. W.	St. Louis
Coughlin, John G.	Edina
Drake, Wm. C.	St. Joseph
Graham, Ralph	Sedalia
Lockhart, Ashe	1336 East 15th St., Kansas City
Morgan, Roy	Skidmore
Morgan, Samuel S.	Richmond
Piatt, Harry B.	St. Louis
Shulz, Carl A.	Independence

MONTANA

Back, Richard G.	Medina Lake
Boyd, Benj. W.	Shirley
Brawner, H. L.	Livingston
Gunn, Nelson T.	Butte
Mock, Clarence E.	Ryegate
Rathbun, R. A.	East Scobey
Rein, A. E.	Lewistown

NEBRASKA

Bohaby, Anton W.	Prague
Foltz, Wm. C.	Lincoln
Gruber, John M.	Lexington
Harold, Wm. E.	South Side Station, Omaha
Ojers, Samuel P.	Crete
Perrin, Floyd	Spencer
Prowett, H. L.	Fullerton
Salsbury, Jos. E.	Western
Sebright, Melvin R.	Crofton
Tumbleson, Benj. F.	Genoa
Viers, Silas B.	Dilles
Walther, Wm. A.	Moorefield

NEW JERSEY

Horner, Lewis D.	Woodstown
Plumer, M. L.	Branchville
Smillie, E. W.	Princeton

NEVADA

Baker, Frank H.	Gardnerville
Wright, David E.	323 Ralston St., Reno

NEW HAMPSHIRE

Law, Samuel T.	Colebrook
Sail, Clark E.	Dixville

NEW MEXICO

Freeman, Carl E.	Carrizozo
Miller, Melvin W.	Albuquerque

NEW YORK

Bosshart, John K.	Camden
Goldberg, Samuel A.	Ithaca
Hagan, W. A.	204 Fairmount Ave., Ithaca
Hall, Arthur G.	Earlville
Howe, Ivan G.	Angelica
Krohn, Lester D.	1465 60th St., Brooklyn
Latshaw, Jos. B.	Ithaca
Pendergast, Walter M.	316 W. Willow St., Syracuse
Price, Leo	1309 Carroll St., Brooklyn
Schreiber, R. J.	Monticello
Selby, Stephens A.	429 W. 43rd St. New York City
Smith, Arthur L.	Mechanicsville
Sullivan, E. J.	Saratoga Springs
Tillson, Hobart W.	Oneonta
Weaver, Philip V.	Glen Cove, Long Island
Wilder, Joseph L.	Akron

NORTH CAROLINA

Flowe, B. Berry	Raleigh
Flowe, Homer P.	Raleigh
Herndon, Franklin C.	Rocky Mound

NORTH DAKOTA

Craig, D. E.	Edmore
Fitch, Edward Henry	McHenry
Foust, Harry L.	Agricultural College
McNiven, Alexander	Williston
Shigley, Jas. F.	Kenmare
Wilson, Roy O.	Stanley
Wilson, W. S.	Bowman

OHIO

Anderson, L.	Cedarville
Backus, Newell D.	Elyria
Bratten, J. W.	Lebanon
Brown, A. Walter	220 South Champion Ave., Columbus
DeTray, E. M.	840 Scott St., Napoleon
Dock, Norton	515 Ludlow Ave., Cincinnati
Dowens, E. Aaron	Mt. Sterling
Frost, Charles E.	Stryker
Gardner, J. P.	Kingston
Greenwood, Ross A.	Painesville
Hinkley, Emmett R.	738 Market St., Sandusky

Haver, E. V.	Conway
Howett, Mark W.	Brookville
Johns, Clarence A.	Medina
Kennedy, R. J.	Bucyrus
Lambert, F. A.	O. S. U., Columbus
Lasher, George H.	Rutland
McNeal, Neal	Burkettsville
Niday, C. Ross	Gallipolis
Ryper, S. T.	1221 Superior Ave., Dayton
Richards, L. J.	Delaware
Sater, Clinton	Hamilton
Schaftstall, A. C.	New Washington
Schlingman, A. S.	Eaton
Trone, Winson O.	96 Hower Ave., E. Cleveland
Turney, Carl D.	Germantown
Wadsworth, Francis R.	Lindsey
Way, R. D.	3911 Perkins Ave., Cleveland
Wills, Frank E.	Westerville
Wickham, J. C.	Galion
Young, Frank A.	Delphos

OKLAHOMA

Gerber, D. W.	Oklahoma City
McCall, William R.	Oklahoma City
Moore, Herbert K.	Blackwell
Shuler, W. P.	Stillwater
Smith, Roy C.	123 E. Randolph St., Enid

OREGON

Beletski, Theodore	L. Wasco
Flack, Edwin R.	Enterprise
Gardner, Chas. M.	Portland
Gunster, Francis	Corvallis
Hanson, Peter	310 City Hall, Portland
Tate, H. L.	102 Custom House, Portland

PENNSYLVANIA

Brossman, Edw. E.	39th and Woodland Ave., Phila.
Church, Harry R.	Wilkesbarre
Faivre, Clovis F.	Latrobe
Ferron, Eugene	3718 Spring Garden St., Phila.
Gearhardt, D. C.	215 South Saint Clair St., Pittsburgh
Hendrick, M. Parks	Meadville
Ivens, Wm. H.	Haverford Ave., Phila.
Kreamer, Wm. C.	110 Market St., Sunberry
Leinhardt, H. F.	102 Lancaster Ave., Wayne
Marshall, Freeman A.	Towanda
Reed, J. O.	230 East New St., Lancaster
Rockwell, C. S.	5128 Chestnut St., Phila.
Schmidt, John P.	200 West North Ave., Pittsburgh
Sheckler, Wm. E.	39th and Woodland Ave., Phila.

Waugh, Wm. J.	Washington
Wright, Harmon K.	Mulford Company, Phila
Caughman, Frederick P.	Columbia
Jacobs, Thos. B.	Newberry

SOUTH DAKOTA

Arbeiter Reinhold	Marion
Edminston, George A. H.	Rapid City
Griffin, W. C.	Rapid City
White, Timothy P.	Mitchell

TENNESSEE

Bell, Wm. J.	610 Broad St., Nashville
Cochran, Willard M.	Trenton
Fry, Hugh L.	Columbia
Haynes, M. C.	Springfield
Metcalf, Glen A.	Knoxville
Nowell, Lester D.	118 12th Avenue, Humboldt
Twitchell, J. M.	Nashville
Willis, Harry W.	Columbia

TEXAS

Bethell, Bailey O.	College Station
Bittick, Samuel G.	Fort Worth
Boyd, Robt	Q. M. D., U. S. A., El Paso
Constable, George W.	Fort Bliss
Crabb, Lewis C.	Fort Worth
Cummins, W. M.	Eagle Pass
Green, Benj. F.	Cumby
Gregory, Wm. G.	Fort Worth
King, Paul R.	Remount No. 2., Fort Sam Houston
Lundell, A. O.	218 Live Stock Exchange Bldg., Fort Worth
Ruble, Jerry L.	Remount Station, Fort Bliss
Stahl, Benton M.	care Y. M. C. A., Fort Worth
Whitney, Clifford	College Station

UTAH

Dallas, John T.	Provo
McGinnis, Ralph W.	Ogden

VERMONT

Thomas, J.	Wells River
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VIRGINIA

Adair, Hugh M.	Bristol
Chesterman, R. L.	606 East Clay St., Richmond
Garvey, Jas. J.	Alexandria
Hays, Clark H.	Burkeville
McGuire, Francis X.	Warwick Hotel, Newport News

WASHINGTON

Ahnert, Ernest F.	646 Central Bldg., Seattle
Coppess, S. A.	Waterville
Gallbraith, Alister R.	Garfield

Jones, Charles E.	North Yakima
Oliver, Karl M.	646 Central Bldg., Seattle
Richmond, Harry A.	Molson

WEST VIRGINIA

Hall, Clifford L.	126 North Park St., Wheeling
Holt, A. J.	Charleston
John, Carl E.	Buckhannon

WISCONSIN

Ames, C. H.	191 12th St., Milwaukee
Bleecker, Arthur B.	Lake Mills
Crump, Leroy S.	Ft. Atkinson
Heller, Edward	Chilton
Hollister, A. V.	Clinton
Kielmeier, S. G.	Cleveland
Lange, A. W.	Lake Mills
Larson, Vernon S.	Berlin
Lee, Jephtha D.	Menomonie
Nolechek, Wm. F.	Thorp
Paquette, J. D.	Cuba City
Swan, Wm. R.	Stevens Point
Veidig, C. C.	Luck
Warn, Chas. C.	Dodgeville

WYOMING

VanHoozer, A. L.	Powell
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CANADA

ALBERTA

Christie, Victor V.	Cardston
McCarthy, Nathaniel	Castor
MacMillan, Donald	High River
Patton, Wm. T.	Coutts
Pinhorn, Gerald C.	Coutts
Wilson, A. F.	Carmangay

BRITISH COLUMBIA

Bruce, Edw. A.	Agassiz
Sleeth, Trewelyn, E.	688-690 Sycamore St., Vancouver
Thompson, Wm.	Keremes

MANITOBA

Bowes, Elliott D.	Boisswain
Robinson, Major S.	Camp Hughes

NEW BRUNSWICK

Doyle, Lawrence S.	Moncton
Johnston, J. Fred	St. John

NOVA SCOTIA

Fraser, Heywood J.	New Glasgow
Jakemen, Wm. W.	Halifax
Keyes, Burton	118 Falmouth St., Sydney
MacIsaac, D. A.	St. Andrews

ONTARIO

Ball, Chas. A.	St. Thomas
Bell, Wm. R.	423 Dufferin Ave., London
Bone, David R.	900 Bloor St., Toronto
Boyd, Henry	Essex
Buchanan, Henry	Thamesville
Brown, Arthur	Sarnia
Carley, A. A.	117 Brant Ave., Brantford
Clapp, Walter H.	Dresden
Clegg, Robert	516 Indian Grove, Toronto
Cook, Robert H.	1127 Keele St., Toronto
Ford, Albert T.	Wingham
George, John H.	60 Silverton Ave., Toronto
Irvine, D. A.	1127 Keele St., Toronto
Johannes, Conrad J.	22 Garfield Ave., Hamilton
McBride, Wm. J.	Amherstburg
MacMaster, Donald A.	Dalkeith
Marriott, Wm. H.	2 Hartington Place, Ottawa
Morse, Jas. E.	3 Brock Crescent, Toronto
Moynihan, Wm.	135 Wright Ave., Toronto
Murray, Alexander G.	Ingersoll
O'Hara, Peter W.	Manotick
O'Hara, R. T.	Maxville
Orchard, George W.	Windsor
Reid, Jos. C.	Biological Laboratory, Ottawa
Rhody, Francis S.	Chatham
Robertson, Allan	1127 Keele St., Toronto
Rowe, Wm. B.	143 Park St., Chatham
Sparks, H. C.	Ottawa
Sparling, Wm.	Harrow
Stewart, A. D.	Ailsa Craig
Stork, Wm.	Brampton
Tennent, David C.	833 A. Bathurst St., Toronto
Torrie, Arthur R.	17 Hepbourne St., Toronto
Wallace, Chester L.	381 Demdas St., Toronto
Watson, Thos. E.	23 N. Main St., Niagara Falls
Wilson, Arthur M.	Wheatley

PRINCE EDWARD ISLE

Leckie, Andrew A.	Charleston
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PHILIPPINES

Brower, Geo. W.	care Dept. Quartermaster, Manila,
Cherry, Allen E.	Jolo, Jolo

QUEBEC

Conture, Jos. N. L.	65 Walker St., Montreal
Genereux, D.	438 Amhurst St., Montreal
James, Wm. H.	557 LaSalle Rd., Verdun
Longevin, J. O.	Hull

McIntosh, Charles	74 LaSalle Rd., Verdun
Poirier, J. O.	Trois Rivières
Starnaman, George	40 Rielle Ave., Verdun
Weaver, Cecil H.	St. Lambert
Wilson, Louis A.	167 Commissioner St., Montreal
Wood, Wm. R.	167 Commissioner St., Montreal

PERMANENT COMMITTEE OF THE INTERNATIONAL VETERINARY CONGRESS

MINUTES OF THE MEETING AT LONDON, AUGUST, 1914.

AGENDA.

- I. Opening by the President.
- II. Minutes of the last meeting.
- III. Report of the Secretary on the work of the permanent committee since the last meeting.

IV. Completion of § 3 of the Bye-laws.

It is advisable to add the following sentence:

"The Executive Committee must present the official Agenda of the Congress before its publication to the President of the Permanent Committee for the purpose of receiving his signature."

V. Amendment of § 8 of the Bye-laws:

The following wording was recommended:

"The committee will meet immediately after the closing of the congress and elect the bureau. The bureau consists of a president, two vice-presidents, the secretary and an assistant-secretary. The election of members of the bureau will take place by unanimous assent or verbal or written voting. A simple majority will decide; in case of equal voting decision will be by drawing lots.

The committee has its secretary's office fixed at the Hague under the Patronage of the Dutch Ministry of Agriculture, Industry and Commerce.

When the secretary lives in the Netherlands and does not act as treasurer, a veterinary surgeon at the Hague may be appointed as treasurer, if the secretary desires it. When the secretary does not live in the Netherlands, a veterinary surgeon at the Hague shall be elected as treasurer and assistant-secretary. The treasurer is to be elected by the committee."

FOOT NOTE:—Different circumstances prevented the publication of the minutes of the London meeting at an earlier date.

Leiden, April 1916.

The Secretary
Prof. Dr. D. A. DEJONG.

VI. Resolution of the Committee about the report of Messrs. Hess, von Ostertag, Schnürer, Rabieux and Titze, on disinfection of railway-cattle-waggon.

VII. Resolution of the Committee about the report of Messrs. Stockman, Rickmann, Hoogkramer and van Es, on the subject of oversea-transport of domestic animals.

VIII. Report of Mr. de Jong on the subject of an international commission for combating tuberculosis.

IX. Admission of the Italian language as an official language of the congress.

X. Place of meeting of the next congress.

XI. Propositions by members of the Committee.

Present: Mr. LYDTIN, President, Sir JOHN M'FADYEAN, Sir S. STOCKMAN, Messrs. DEGIVE, HANGKA, (in place of Mr. BINDER), HOLTH (in place of Mr. HALM), HAPPICH, PERRONCITO, PIOT-BEY, and DE JONG, Secretary.

I. The President opened the meeting by thanking the members who had come to London, and stated that as ten members were present a quorum for business was available.

II. The Minutes of the previous meeting at Lyons were not read as they had been published and circulated to all the members.

III. The report of the Secretary on the work of the Committee in the period between the meeting at Lyons and the present one was approved.

The President gave some information about the installation of the Permanent Secretary's Office at the Hague. He said there were members who feared that the absolute liberty of the Committee might be menaced, but they forgot that the Dutch Government stated that the Committee remained independent.

Mr. DEGIVE said that for the moment there was no reason for fear but only reason for gratitude. For the future the liberty of the Committee ought to be guaranteed.

Mr. PERRONCITO said that the members ought to be grateful to the Dutch Government.

The President remarked that the whole question was threshed out and closed at Lyons. The Committee remained free. We know now that from the balance of the Congress at the Hague, the Dutch Government had given a subsidy of 2626.14 guilders, for the year 1913 1000 guilders, and for future years an annual subsidy of 2000

guilders had been promised. There existed no reason whatever to discuss the matter at the Congress.

IV. The proposal to amend § 3 of the Bye-laws of the Committee was accepted unanimously. The French translation is, following a proposal of Mr. Degive, to read as follows:

"L'ordre du jour officiel des congrès ne peut être publié qu'après avoir été approuvé et signé par le Président de la commission permanente des congrès internationaux de médecine vétérinaire."

V. Amendment of § 8 of the Bye-laws of the Committee is accepted, but with modification of the German text of the second sentence as follows:

"Der Ausschuss hat sein ständiges, unter dem Protektorat des holländischen Ministeriums für Landwirtschaft, Gewerbe und Handel stehendes Sekretariat im Haag."

The French text of the second passage is to read as follows:

"La commission a son secrétariat permanent à la Haye sous le Patronage du Ministère hollandais de l'Agriculture, de l'Industrie et du Commerce."

In English the second sentence reads as follows:

"The office of the Secretary to the Permanent Committee is located at the Hague under the Patronage of the Dutch Minister of Agriculture, Industry and Commerce."

The German text of the third sentence was accepted without alteration. The French text is to read "secrétaire suppléant" for "secrétaire adjoint" and the English text "deputy-secretary" for "assistant-secretary."

VI. Sir STEWART STOCKMAN gave information about the report on the disinfection of waggons. He regretted the mistake of the English Organizing Committee in connection with this matter, and gave the history of the question. It was difficult to obtain a reply from the reporters. Only Mr. TITZE answered by sending his report, but it was impossible to prepare a joint report. There was no reply from the other reporters, and it seemed advisable to postpone the joint report to the next Congress.

This conclusion was accepted and was to be communicated to the Congress.

VII. Sir STEWART STOCKMAN further said that the preliminary report of Mr. HOOGKAMER with the remarks of the other reporters could not be presented as a joint-report to the Congress, be-

cause the remaining time was too short. Mr. DE JONG said that Mr. HOOGKAMER addressed to him (Mr. DE JONG) his report with the remarks of the other reporters and correspondence about it. He had had it printed and had sent a specimen to the members of the Committee.

Sir. S. STOCKMAN said that these reports would be reproduced and distributed to the members of the congress.

VIII. The report of Mr. DE JONG on the subject of the opportuneness of an international committee for combating tuberculosis was printed and distributed to the different members of the Permanent Committee. The President proposed to present the report for consideration by the Congress. This proposition was agreed to.

IX. Mr. PERRONCITO asked leave to address the meeting on the subject of the admission of the Italian language as an official Congress language. He said that the Italian Government could not send an official delegate if the Italian language were not accepted as an official one. He thought that in any case the Permanent Committee ought to recommend to the Congress that Italian be an official language for the discussions, and that the relative amendment to § 25 of the Congress bye-laws should be made. In this case he thought that Italy would invite the next Congress.

The President and Mr. PIOT-BEY referred to the inevitable augmentation of the expenses of the Congress if the proposal of Mr. PERRONCITO was accepted. That was indeed the difficulty.

Sir STOCKMAN said that one language more would cost about £ 1000.

Mr. DE JONG thought this estimate too high and recommended the proposal.

Mr. HAPPICH instanced the utility of accepting the Slavonian languages. The result would be a considerable augmentation of the members.

Sir S. STOCKMAN said that he would support the proposal to introduce the Italian language.

Sir JOHN M'FADYEAN said, as President of this Congress, he would allow discussions in the Italian language, but he would prefer to delay the question of the alteration of § 25, as at this Congress the majority of the members are English-speaking.

Mr. PERRONCITO again said that in that case it would be impossible for Italy to send representatives to the next Congress.

The President indicated the great difficulties which would arise if the Italian language was added to the others.

Mr. PERRONCITO asked for a copy of a decision of the Committee, indicating the desirability of introducing the Italian language.

Mr. LYDTIN said this was impossible. The Committee could only propose the question to the Congress.

Mr. PERRONCITO said he had heard from Sir S. STOCKMAN and Mr. DE JONG that the Congress could accept the proposal without discussion.

Sir. S. STOCKMAN and Mr. DE JONG explained that this was possible, but that the Congress could not be forced to accept the proposal.

Mr. PERRONCITO said that in this case Italy could not invite the Congress.

Mr. LYDTIN replied that Italy in this case only desires to serve her own interests, but that notwithstanding this he would propose:

- a. Italian language for the discussions and
- b. Amendment of § 25.

Mr. DEGIVE thought it possible to reduce the expenses by diminishing the number of reporters. He supported the proposition of the Chairman, on the understanding that Italy would invite the Congress. On this he formulated a proposal.

Mr. HAPPICH said that possibly Russia would also invite the next Congress.

Mr. LYDTIN said that the Congress ought to be free to vote on the single question, and that the proposal of Mr. DEGIVE was dangerous in this respect. He maintained his proposal without any addition whatever. This was accepted unanimously.

Mr. LYDTIN proposed further that the two parts of the proposal should be brought before the Congress by the London Organising Committee, indicating that the matter had been approved by the meeting of the Permanent Committee. This proposal was also accepted.

Mr. DEGIVE said that now Mr. PERRONCITO could communicate with his Government about the next Congress, waiting the decision of the Congress at London.

X. The subject "Place of the next Congress" was postponed, a resolution not being possible on account of the war. Mr. DEGIVE

however, thought it advisable to undertake non-official steps regarding the next place. The meeting thought it better to wait.

XI. Sir S. STOCKMAN, Honorary Secretary of the London Congress, proposed two alterations of the Bye-laws of the Congress. The first was the modification of § 7 as follows:

"To assist in the preliminary work of future Congresses a standing National Committee of not less than three members shall be formed in each country. The names and addresses of the members of each Committee, and the name and address of the Secretary of each Committee shall be forwarded to the Secretary of the Permanent Committee for record, and each Committee shall advise the Secretary of the Permanent Committee of any alteration in its constitution which may have taken place. The functions of National Committees shall be restricted to their respective countries."

"The rest of § 7 to remain unchanged."

Sir S. STOCKMAN explained the reasons for this proposal.

The President thought that this alteration of the Bye-laws would not insure more active National Committees, but he proposed to treat this proposal at the closing meeting of the Congress. This was accepted.

Mr. LYDTIN proposed the same with regard to the second proposal of Sir S. STOCKMAN, concerning alteration of § 47, which ran as follows:

Proposed addition to § 47:

"The funds under b., however, will not be subject to § 48, and 50, unless the donors have made the contrary a condition of their gifts, but the Permanent Committee may if they so desire, require that a portion of any surplus under b. not exceeding the sum of twenty pounds, be devoted to the expenses of administration of the Permanent Committee.

The meeting accepted the proposal to bring this alteration before the closing meeting of the Congress.

Mr. DEGIVE proposed the adhesion of the Permanent committee to the Association Centrale des Congrès internationaux at Brussels, which institution was supported by Carnegie funds. The meeting decided that the Permanent Committee could adhere (*peut s'applier*).

The CHAIRMAN thanked the English members for their hospitality, and for preparing the London Congress, which undoubtedly would prove to be a success, and all the members for their much ap-

preciated presence. Sir STEWART STOCKMAN offered his thanks in the name of Sir JOHN M'FADYEAN (who had been called from the meeting), for the assistance given by the President and the members of the Permanent Committee and for the honour they had bestowed on the Congress by coming to London. The meeting was then closed. Mr. HANGKA left before the closing.

The President,
Dr. A. LYDTIN

The Secretary,
Dr. D. A. DE JONG.

THE VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION

The Virginia State Veterinary Medical Association met at Ocean View Hotel, July 13 and 14, 1916. This was one of the best summer meetings the association has experienced, and a large percentage of the members were present.

The papers were all good and there were a number of splendid addresses. Prof. Saunders, Professor of Dairy and Animal Husbandry at V.P.I., gave a splendid address on "The Veterinarian as a City Health Official." Dr. Henry Marshall, B.A.I., Richmond, Va., gave a splendid address on "Post Mortem Conditions of Animals Reacting from the Tuberculin Test."

Several members of the association have joined the army and are very much pleased with the conditions under the Hay Bill.

Dr. J. G. Ferneyhough, State Veterinarian and Chairman of the Legislative Committee of the association, gave a full and detailed report of his work as chairman in connection with the passage of the army veterinary bill. He read a number of letters from Dr. Horace Hoskins setting forth the facts that he had been of great assistance to Dr. Hoskins in arranging interviews with Congressman Hay and Senator Martin, without whose assistance Dr. Hoskins thought the bill would not have passed at this session of Congress. Dr. Ferneyhough was thanked by the association for the clever way in which he handled this work. I am sure the Virginia Association has a man of power and influence as State Veterinarian and Chairman of this committee.

W. G. CHRISMAN, Secretary.

REVIEW

VETERINARY BACTERIOLOGY: A TREATISE ON THE BACTERIA YEASTS, MOLDS AND PROTOZOA PATHOGENIC FOR DOMESTIC ANIMALS

ROBERT EARL BUCHANAN, Ph.D.

Professor of Bacteriology in the Iowa State College of Agriculture
and Mechanical Arts, and

CHAS. MURRAY, B.Sc., D.V.M.,

Associate Professor of Veterinary Bacteriology of the same institution.

Second edition thoroughly revised. Philadelphia and London.

W. B. Saunders Co., 1916. pp. 590.

The preparation of a text book in bacteriology has become exceedingly difficult because of the voluminous literature on the subject and further because there are still pronounced differences of opinion on many phases of the subject. The authors of this volume have taken for their task the preparation of a text for veterinary students covering the technic necessary for the study and identification of microorganisms and a description of those species pathogenic for domesticated animals together with a few somewhat closely related forms. Fungi, protozoa and filterable viruses are also discussed. The subject matter is well chosen and the sequence of presentation is good. A commendable variety of bacteriological methods including preparation of media and stains is given. The discussion of immunity is quite extensive but that on the bacteriology of milk is brief.

The volume is divided into seven sections which cover the subject matter that would be expected in such a book. They are as follows: Section I. Morphology, physiology and classification of bacteria. II. Laboratory methods and technic. III. Bacteria and the resistance of the animal body to disease. IV. Pathogenic microorganisms exclusive of the protozoa. V. Pathogenic protozoa. VI. Infectious diseases in which the specific cause is not certainly known. VII. Bacteria of water and food.

As a text, the details of method and the description of species tend to be general rather than complete, direct and definite. This is fairly illustrated in the definition of *Micrococcus*. "This genus is frequently defined to include *Staphylococcus*, just discussed. It may be differentiated generally by its Gram-negative character and the very common production of yellow pigment. Spores are not produced. The motile species are sometimes segregated under the heading of *Planococcus*." It is doubtful if a beginner will obtain

from this definition a clear conception of just what a micrococcus is and just how it is to be identified.

Although there is given a list of authors, to whom reference is made in the text, it is to be regretted that there are no bibliographies or references whereby a student may ascertain the sources of the statements made or to enable him to consult the literature on the different phases of the subject. While the literature is too extensive to admit of complete references, a text book, which should be a key to the knowledge of the subject, should contain some of the more important references to the results of original research or in other ways direct the student to the sources of information.

The authors have adopted a classification of bacteria that is difficult to account for and which from a scientific point of view seems to have little to commend it. The older and well recognized classifications of bacteria are not mentioned with the exception of Migula's which is referred to only. The later and more comprehensive classifications of Fisher are likewise omitted. The authors have adopted a system of grouping pathogenic bacteria. They refer to the streptococcus group, diplococcus group, anthrax group, dog-distemper group, etc. The somewhat antiquated genera of *Diplococcus* and *Staphylococcus* are revived. The statement is made that "the groupings used in the text will be based on the relationships rather than pathogenic resemblances". It is unfortunate that a text book to be used by beginners in bacteriology should ignore recognized scientific classifications without setting forth definite and sufficient reasons for rejecting them and for the terms actually employed. While it is true that in the study of the etiology of a disease the classification of the incriminated organism may be of little significance, the fact remains that all there is to make bacteriology a science rests in the classification and identification of the organisms, their physiologic, biochemic, and in case of disease producing organisms, pathogenic properties and the methods for their determination. In a broader sense, tissue reactions and immunity may perhaps be included but they do not interfere with the basic biologic principle of classifying organisms into families and genera according to their morphology. Groups of bacteria (including a species and its varieties) have long been recognized but the data are not given to justify the extreme position that genera are so closely related as to require group designations such as the blackleg-tetanus group. The difficulty in the classification

of bacteria does not rest with the generic characters but with the species which are determined by their physiologic and biochemic properties which may be more or less influenced by environment.

In the methods given for diagnosing infectious diseases by the aid of their organisms, either directly or by specific tests, there seems to be a lack of discrimination that comes with practical experience. Thus, Konew's precipitation test for the diagnosis of glanders, which has been thoroughly tried and generally found to be unsatisfactory, is given as one of the important methods of diagnosis. The authors have not shown as full an appreciation of the responsibility of the makers of text books to the students who use them as most teachers like to see.

The text is illuminated with 209 illustrations most of which are well chosen and instructive.

V.A.M.

COMMUNICATIONS

EXECUTIVE BOARD AND DUES

To the Editor:—Before this issue reaches the members they will have received a letter enclosing the official ballot for the nomination of candidates for the office of District Member of the Executive Board, a statement of dues for those in arrears and a membership card for those having paid in full.

The letter should be read carefully and its instructions fully carried out to avert unnecessary correspondence and hasten the election of the members of the administrative body.

It must be remembered that the retiring secretary did not send out statements of dues during 1916 and that the members are therefore in arrears through no fault of their own. The dues for the years prior to 1916 are three dollars per annum but for 1916 they are five dollars, the new constitution and by-laws adopted at Detroit providing for the increase of two dollars.

It must furthermore be remembered that the quotation from the by-laws transcribed on the statements and which states that the dues are payable in advance on the 1st of January does not apply to this year.

If your statement seems to be incorrect or can be proven incorrect by receipts in your possession, the Secretary's office will be pleased to take the matter up with you promptly with the view of eliminating as many errors as possible from the new ledger to which all accounts will soon be transferred.

Very respectfully, L. A. MERILLAT, Sec'y.

MODERN REQUIREMENTS IN THE SHOEING OF HORSES —ESPECIALLY IN CITIES

New York, September 16th, 1916.

EDITOR JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION:—A paper which I presented to the New York State Veterinary Medical Society at its recent meeting in Ithaca, and which you published in your September issue, on the above subject, seems to have struck a sympathetic chord; the vibrations from which, have reached me here in my office from all points of the compass in the form of letters from readers of the *Journal* who, having read the article, seem to have become very much interested and desire to know many things in connection with the method of shoeing that I proposed. Among others the name of the shoe which I referred to and from whom it can be procured I started to reply to them personally, and referred others to the firm manufacturing the shoe; but the inquiries have become so numerous, that I am compelled to reply to them through the *Journal*, asking to be pardoned for not replying to the letters individually. At the same time I want to express my intense gratification at the interest manifested by my brothers in the profession, in so worthy an object as that of a safe and humane shoeing of our faithful friend and patient toiler, the horse.

The two questions in all the letters, the answers to which will be a key to all the information desired, are, the name of the shoe and where to procure it, as once they have that they can get all the data on the shoe they desire from the manufacturers.

The shoe is called the "Spring Step" and it can be supplied and put on at any horse shoer's establishment. If, however, any difficulty is experienced in getting horse shoers to supply them, they can be procured by writing directly to the Revere Rubber Company, 59 Reade Street, New York. In writing to the firm for them, it will be well to address communications to Mr. Wm. J. Kent, Manager of the New York branch, who is the man who perfected the shoe, and can give valuable information. Especially as he is an expert on the horse's foot, having at one time been a shoer of high-class horses.

ROBERT W. ELLIS.

SHOEING FORGE*

Dear sir:—I am sending you herewith a drawing of a field forge fire. We are supposed to do cold-shoeing on battery horses but the shoeing smiths do not appreciate the cold methods. Necessity is the mother of invention and our smiths made a forge from available material.

The iron work of the fire-box is made from hammered out corrugated iron, such as is used for roofing store-houses, etc., spindles,

*Courtesy of Dr. Torrance.

gears and bolts being obtained from old push bikes. There are quite a number of these fires in the field now and they apparently answer the purpose for which they were intended. The Sergeant-Farrier has just told me that this fire will melt iron.

The weather has been tropical the past two weeks, and the dust beyond description. Have had a little mange but have managed to treat it ourselves without having to evacuate any to the hospitals. Watson, Cameron, Vickers and myself are using calcium sulphide solution and we make it by boiling over trench fires in empty oil drums. About three washings every eight days seem to check the disease nicely. As a preventive I use a mixture of soap-suds and bichloride of mercury 1-1000. Our apparatus is very rudimentary. It is very difficult to obtain appliances in the field. Am very busy now, V. O.'s being compelled to visit all horses "at least once daily"—the order reads. My area covers eight miles, possibly nine miles, I am not quite sure. Anyhow, I keep two or three horses going.

Some time ago I found an old farm cart and the engineers have painted it up and I am now a "self-contained unit." My men have found, borrowed and stolen sufficient harness and I can easily get a horse so I move myself (bed and board) from place to place.

Lt. Col. J. H. D. Smith has gone to England. I do not know why and we have Lt. Col. Wilson from Stonecliff as A.O.V.S. for this Division.

I was surprised to learn that Belgium is not more than twice or three times the size of Carlton County, Ontario and has in peace times a population of six millions. Now I appreciate the intense system of farming which is practiced in this country, practically every foot of available soil being under cultivation.

Looks as if we are to experience another winter out here. However, next month will decide that I suppose.

(Signed) T. CHARLES EVANS.

Dr. J. O. F. Price, formerly of Memphis, Tenn., is now stationed at Waterloo, Iowa.

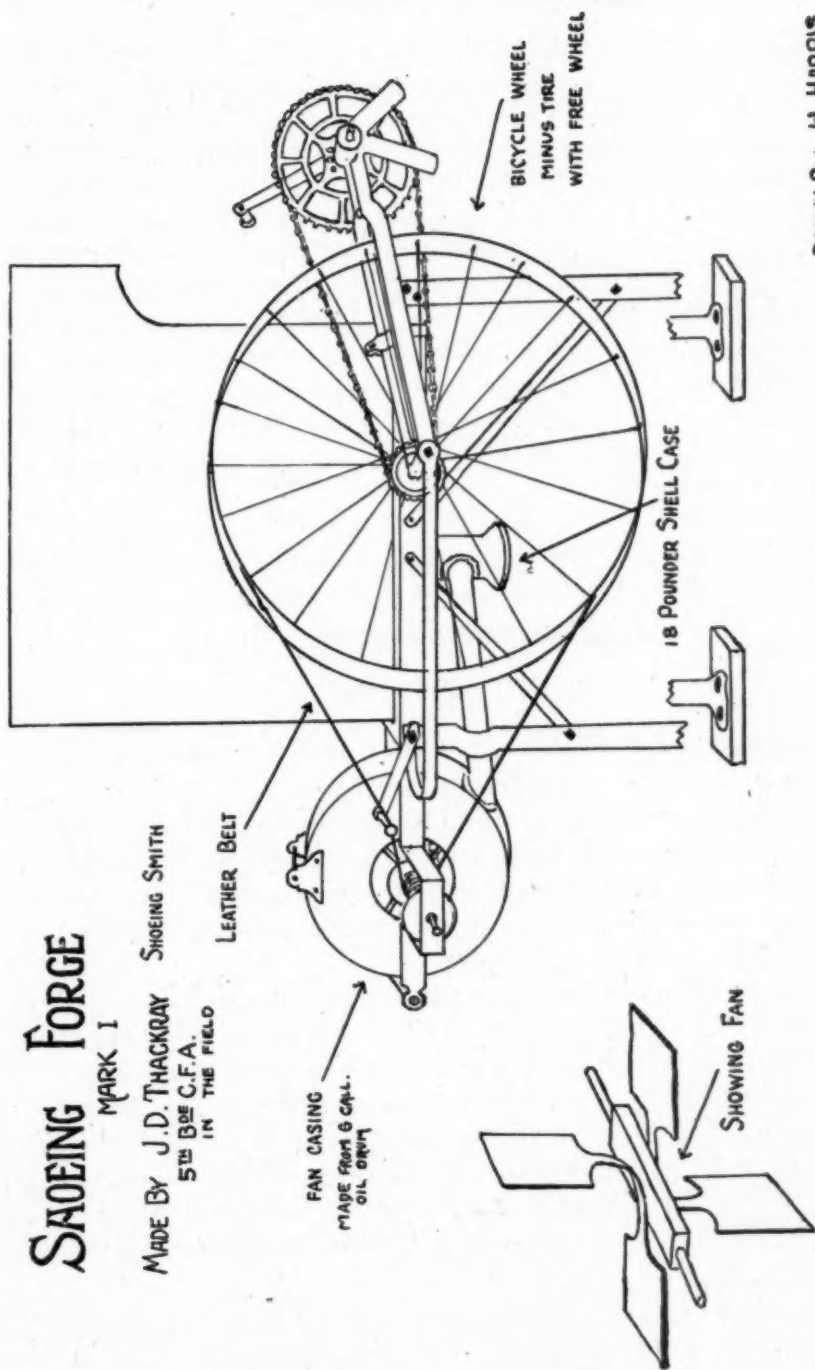
Dr. J. J. Frey, formerly of Manhattan, Kansas, has removed to 3400 Indiana Ave., Chicago, Ill.

An address on the "Humane Treatment of Animals with Special Reference to Shipping Calves and Poultry" was delivered by Dr. V. A. Moore, at the 27th annual convention of the Societies for the Prevention of Cruelty to Children and Animals of New York State, at its recent meeting at Watertown, N. Y.

SAOEING FORGE

MARK I

MADE BY J.D. THACKRAY SHOEING SMITH
5TH BDE C.F.A.
IN THE FIELD



DRAWN BY H. HARRIS
6/12/16.

NECROLOGY

WILLIAM LOUIS ROSWELL

Dr. Wm. L. Roswell died at his home, 122 Fourth Ave., Corry, Pa., from an infection in the hand, received while treating a cow. He was a member of the A.V.M.A. and an inspector in the Pennsylvania State Livestock Sanitary Board. Dr. Roswell was born in Brooklyn, N. Y., June 27, 1880. He attended the public schools at Brooklyn and was graduated from the Veterinary Department of the University of Pennsylvania in 1914; went to Corry, Pa., and started in practice immediately after his graduation and was meeting with success. He established a good reputation in his community and had brilliant prospects for a useful career as a private practitioner in that community.

He attended the Detroit meeting and was as well as usual, but after his return to Corry developed a case of septicemia from which he died on September 13th, leaving a wife and one child.

MISCELLANEOUS

VETERINARY LAW IN KENTUCKY. An act was passed by the last General Assembly and approved March 24, 1916, which regulates the practice of veterinary medicine, surgery and dentistry in the State of Kentucky. A state board of veterinary examiners was created which shall hold meetings whenever necessary for the purpose of receiving applications for certificate of license or the examination of candidates for such certificates.

All persons who have been practising veterinary medicine, surgery or dentistry in the state for one year next prior to the passage of the act and those holding diplomas from recognized veterinary colleges are entitled to a license upon application to the board and its approval and the payment of a fee of \$7.00. The licenses must be recorded in the office of the county clerk in which the licensee resides. Until the license is recorded the holder shall not exercise any of the rights and privileges therein conferred.—*News, Willmington, Ky.*

DOMESTIC ANIMALS AND POLIOMYELITIS. In order that exact information may be obtained as to whether poliomyelitis occurs in domestic animals, and if so, whether the latter play any part in the

transmission of the disease, all the nurses in the department now visiting cases of poliomyelitis have been instructed to make a special inquiry regarding animals. If they find anything suspicious they will report the matter immediately and the suspected animals will be removed by the Department of Health for observation. A veterinarian will then examine the animal and if the suspicion is justified, the animal will be killed and an anatomical examination made.

In addition to this, arrangements have been made, whereby a veterinarian of the Department will visit the shelter of the Society for the Prevention of Cruelty to Animals to see whether any suspected cases of animal infection are there encountered.—*Weekly Bulletin, Dept. of Health, New York.*

The following named employees of the Bureau of Animal Industry have been assigned to duty along the Mexican border to co-operate with the War Department in the inspection and reinspection of meat and meat food products supplied to the troops on duty in that section. They are also observing the conditions under which these products are handled and distributed with a view to obtaining sanitary conditions:

Dr. John R. Aufente, Eagle Pass, Texas,

Dr. T. A. Bray, El Paso, Texas,

Mr. W. A. Kessler, assisting Dr. Bray,

Dr. A. C. Drach, Laredo, Texas,

Dr. J. E. Dwyer, Nogales, Arizona,

Dr. Smith V. Ewers, Douglass, Arizona,

Dr. R. M. Mullings, San Antonio, Texas,

Mr. J. L. Boyle, lay inspector, assisting Dr. Mullings,

Dr. W. F. Osborne, McAllen, Texas,

Dr. John W. Taggart, Columbus, New Mexico,

Dr. C. M. Walton, Brownsville, Texas,

Mr. P. J. Brackin, lay inspector, assisting Dr. Walton.

In addition to the above assignments Dr. W. O. Trone, traveling veterinary inspector, has been detailed to assist in this work by investigating its conduct at the various headquarters. Dr. Boyd Baldwin is also assigned to army work at Chicago.

Dr. T. O. Booth has removed from Ash Grove, Mo., to Amarillo, Texas.

Dr. F. W. Schofield of the Department of Bacteriology, Ontario Veterinary College, Toronto, Canada, gives his future address as Union Medical College, Seoul, Korea.

We have received an inquiry relative to one Robert Hall who proposes to solicit money for the American Society of Foreign Veterinarians. We have no knowledge of such a society or of the solicitor. Every precaution should be taken to prevent the misappropriation of funds intended for foreign veterinarians in need of aid.

The marriage of Miss Fay Allison Scott of Middletown to Dr. C. W. Lynn of West Point, Ia., occurred at the home of the bride September 6. After a trip to the Rockies they will settle at West Point, where Dr. Lynn has an extensive practice.

HOG CHOLERA. Order No. 6 of the Department of Agriculture of New York State, requires that all persons shipping or bringing into the state any virus, virulent blood or similar product for treating swine, preventing or controlling hog cholera, shall report to the Commissioner of Agriculture; the name and quantity of such product brought in; name and address of shipper; name and address of person to whom such product is delivered; method and date of such shipment.

Any person using virulent blood must do so in accordance with Circular No. 7, issued by the Department and must inform the Commissioner at least five days prior to its use; the date and place where the product is to be used; the name and address of the owner of the swine and a statement that swine so treated will be isolated from susceptible animals.

Unless for immediate slaughter, swine shipped into public stock yards; shall not be removed without special permit from the Commissioner.

Swine coming from herds in which hog cholera has existed within sixty days prior to removal shall be slaughtered under the supervision of a veterinarian and a written report of the conditions sent to the Commissioner within seven days.

Swine not intended for immediate slaughter must be transported in disinfected cars or cars not previously used for hauling swine; they shall be kept in pens properly disinfected or pens not previously used for swine.

Carcasses of swine, dead of hog cholera shall be cremated; boiled or treated with steam at boiling temperature for two hours continuously, or buried with quick lime two feet under ground, 100 feet away from streams or other source of drainage.

According to the weekly Roster of the Medical Organizations of Philadelphia and vicinity, "The War Department at Washington has made the significant decision that the Government cannot accept the offer of the services of any doctor as a volunteer surgeon in the Army or Navy who is not a member in good standing in his County Medical Society, and, therefore, of the American Medical Society." Although the above statement refers to physicians it would also seem to have significance for veterinarians.